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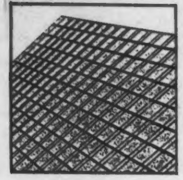

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DEC launches VAX 8600

Processor boasts 4.2 times power of earlier models; ECL chips boost speed, preclude field upgrades

By John Desmond
CW Staff

MARLBORO, Mass. — Digital Equipment Corp. last week announced its long-awaited VAX 8600 high-end processor for the VAX family. The most powerful processor ever offered by the second largest computer maker, the VAX 8600 is said to be 4.2 times more powerful than the VAX-11/780.

The 32-bit VAX 8600, the culmination of the project code-named Venus, features custom emitter-coupled logic semiconductor technology, which is said to offer a cycle time that is 2½ times faster than the Shottky transistor-transistor logic gate arrays used in the 11/780. ECL semiconductor technology makes the 8600 the first of a new generation of computers in the VAX family, DEC said. This technology also prohibits other VAX-11 users from field-upgrading to the 8600.

Analysts feel the 8600 meets expectations and puts DEC on a somewhat different marketing tack. Page 4.

The 8600 is expandable to 32M bytes of main memory, 160G bytes of on-line storage and is capable of supporting up to 512 communications lines directly, DEC said. The 8600 runs the VMS Version 4 operating system. A fully configured VAX 8600 cluster is said to offer 30 times more computing power than a VAX-11/780.

Cycle time on the 8600 has been reduced to 80 nsec, down from 200 nsec on the 11/780. The processor's memory subsystem incorporates 256K-bit MOS chips that allow the 32M-byte maximum main memory. The balance of performance improvement in the 8600 has been achieved by reducing machine cycles required per instruction, the company said.

The 8600 offers a 16K-byte write-back

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TOP OF THE NEWS

Answering a call for more fully integrated voice/data workstations, Rolm Corp. unveiled two machines that combine personal computer and intelligent phone capabilities. **Page 2.**

■

A Cobol compiler for the IBM Personal Computer has drawn rave reviews from early users, who claim it allows DP departments to off-load up to half their mainframe programming. **Page 7.**

■

Office automation vendors are scrambling following IBM's announcement last month of a major line of OA products, which observers say has set a standard for its competitors. **Page 8.**

■

From tiny acorns. A two-year-old start-up has rolled out a 64-bit scientific processor employing an architecture similar to Cray Research, Inc.'s Cray-1 supercomputer. **Page 75.**

■

You mean they're still installing IBM 370s? Yes, and a lot of other seemingly outdated machines are being gobbled up in a frenetic and booming used computer rental market. **Page 93.**

■

STC seeks Chapter 11 protection

By Peter Bartolik
CW Staff

LOUISVILLE, Colo. — Storage Technology Corp. filed a petition last week for reorganization under Chapter 11 of the U.S. Federal Bankruptcy Act, compressing further the already troubled domestic IBM plug-compatible disk drive market.

The petition, filed in bankruptcy court by financially ailing STC, followed by one month Control Data Corp.'s decision to bail out of the plug-compatible disk drive business [CW, Oct. 8].

CDC's exit and STC's filing leave Memorex Corp., the Burroughs Corp. subsidiary, as the sole domestic plug-compatible manufacturer publicly committed to an optimistic view of the PCM disk drive business. That optimism, however, is not shared by analysts, who see Memorex as threatened, if not failing. Those analysts see IBM's competition in the PCM arena coming from Japanese firms Hitachi Ltd. and Fujitsu Ltd.

In a statement released last week after the firm filed for bankruptcy protection in Denver, STC said it would operate under Chapter 11 to restructure its capital base, develop and implement operating strategies and consider possible divestitures. Still, the company said it now expects to post a third-quarter loss in excess of $60 million.

Two weeks earlier [CW, Oct. 15],

See **STC** page 6

High-technology ubiquitous in political arena

Industry PACs stepping up role in election process

By John Desmond
CW Staff

WASHINGTON, D.C. — As voters cast their ballots tomorrow in races for the U.S. House of Representatives, Senate and presidency, political action committees of data processing and electronics industry associations hope their chosen candidates will emerge as winners.

More high-technology PACs have surfaced since the 1982 national elections, just as corporate PAC contributions have risen since then. Corporate PACs contributed $18.7 million from Jan. 1, 1983, to June 30, 1984, to candidates running for national office. That compares with $12.4 million contributed from Jan. 1, 1981, to June 30, 1982, Federal Election Commission figures show.

The Information Industry Association made its first candidate contribution this year — $250 to Rep. Jack Brooks (D-Texas), chairman of the Government Operations Committee and author of the Brooks Act of 1965, which is the basis for government procurement of electronic data processing equipment. Robert Wil-

See **PAC** page 16

Impact of computers runs gamut of political races

By James Connolly
CW Staff

Abraham Lincoln spent election night, Nov. 6, 1860, waiting by a ticking telegraph machine in Springfield, Ill., as election results drifted in from throughout a growing, but still rural, nation.

Before Lincoln went to bed, he was reasonably sure he had won the presidency, but it would be weeks before vote totals arrived from California and raw numbers could be translated into electoral votes.

Tomorrow will provide an indication of how times have changed in 124 years.

If the pre-election polls — which were conducted with the help of computers — are correct, with President Ronald Reagan pocketing up to 60% of the votes — which will be counted with other computers — still more computers will project him a winner by 9 p.m. EST, as they did in 1980.

At that time, the workers who helped build those computers in California will be driving to their polling places knowing that

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NEWSPAPER

Rolm workstations tie phone, micro

Desktop systems integrate voice, data communications

By Eric Bender
CW Staff

SANTA CLARA, Calif. — Taking another step on the road to fully integrated computing/communications workstations, Rolm Corp. last week unwrapped two desktop systems that integrate a personal computer with an intelligent telephone.

Rolm's Cedar combines an IBM Personal Computer-compatible microcomputer with an intelligent telephone based on the firm's Cypress voice/data product. The Juniper add-on package gives similar capabilities to IBM Personal Computers.

Like Rolm's Cypress voice/data workstation, the new "personal communications computer" systems handle voice and data communications (with a long menu of features such as autologon, autodialing and electronic messaging) plus personal productivity functions such as a reminder calendar. Meanwhile, software written for the IBM micro can run in the same desktop unit, with users switching from personal computer applications to a communications menu with one keystroke, company officials said.

Rolm built the systems with close ties to its CBX II line of voice/data switches, an approach that had several major advantages over nonproprietary designs, said Carol Wingard, marketing manager for desktop products.

She emphasized the ease of access through standard telephone lines to external data bases and to other personal computers, minicomputers and larger systems. Cedar and Juniper reportedly each can act as an asynchronous terminal, a DEC VT100 or (through Rolm's IBM Gateway) an IBM 3270.

Unlike a standard personal computer/modem setup, Rolm's proprietary scheme also provides communications speeds up to 19.2K bit/sec asynchronous, the ability to handle voice and data simultaneously over a single line and soft key information on what options are available to users in any given situation, Wingard said. In addition, it gives access to other private branch exchange functions such as modem pooling, network management, call queuing and route optimization, she noted.

Cedar looks very much like the Cypress, packaged in a compact 14- by 15-in. unit and featuring a 9-in. screen with high-resolution text and IBM-compatible graphics display; up to four telephone lines; a handset; a dashboard for communications functions; a two-way speakerphone; a pull-out, 68-key typewriter-style keyboard; an 8K-byte nonvolatile removable personal data module; and a parallel port. Cedar reportedly adds an Intel Corp. 8088 processor, 512K bytes of random-access memory (RAM), two 360K-byte floppy disk drives and other microcomputer hardware. Microsoft Corp. MS-DOS 2.11 and GW Basic are standard.

Wingard noted that with the unit, RAM cannot be upgraded beyond 512K bytes (of which 384K bytes is user-addressable), no expansion slots are provided, there is no ability to add a hard disk drive and the keyboard is different from the IBM Personal Computer's. With those caveats, "we've been rated operationally compatible by [Future Computing, Inc.]," she said.

Cedar costs $4,995 in single-quantity purchases and $4,245 in quantities of 100, Rolm said.

Juniper runs on an IBM Personal Computer or Personal Computer XT and comes in three parts: a card that fits in a standard Personal Computer expansion slot, software and a telephone set. The communications software takes up 128K bytes of RAM, and Rolm recommends 384K-byte configurations, Wingard said. IBM PC-DOS or Microsoft Corp. MS-DOS 2.0 or later versions are required. Juniper costs $1,495 or $1,360 in quantities of 100. Shipment is slated for January.

Rolm is located at 4900 Old Ironsides Drive, Santa Clara, Calif. 95054.

Voice/data debuts garner mixed reviews

Some industry analysts who took early looks at the products unveiled by Rolm Corp. last week (see accompanying story this page) gave them high marks and predicted they would pioneer a new market segment, while other observers expressed mixed opinions.

Cedar "is very impressive," said Randall Sherman, vice-president for telecommunications and office automation at Creative Strategies, Inc. in Cupertino, Calif. "The product itself isn't revolutionary, but it will send the competition reeling."

"In hindsight now, IBM will look as if it has executed a stroke of genius," Sherman added. "Current Rolm installations have no other rational alternative when considering [personal computer] purchases." A second likely market is large IBM installations currently looking to buy private branch exchanges (PBX), Sherman said.

"Cedar and Juniper are going to be trendsetting products," predicted Ken Newbury, industry analyst with Dataquest, Inc. of San Jose, Calif. "Rolm has really done a good job. [It] offers an end user a choice, and the costs are not out of line."

Kirsten Sanders, market analyst with Yates Ventures, Inc. in Palo Alto, Calif., said that "people will look at the products much more seriously" because of IBM's impending acquisition of Rolm, but she forecasts strong competition.

"It's no secret that the next six to eight months will see a rash of such products," said Warren Waldbrand, research director at Omni Group Ltd. in New York. Waldbrand suggested that entries were likely from all the major PBX manufacturers, Compaq Computer Corp., Texas Instruments, Inc., Santa Barbara Development Laboratories, Inc., Sydis, Wang Laboratories, Inc. and "a lot of little companies."

Waldbrand, like several other analysts, described the Cedar's inability to house a hard disk drive as a major weakness. He also wondered, "Why, today, would any vendor make a display that doesn't swivel or tilt?"

Your news is good news

Hard as we try to give our readers the most complete information available, some good news and feature stories never reach us.

Are you involved in an unusual application of DP technology in your company? Have you implemented successful cost-cutting strategies? Is something in your DP shop not working as designed? Know any unsung heroes? Heard any hot news about vendors? Are you aware of technology or management trends the trade press is overlooking?

If so, we'd like to hear from you. *Computerworld* has established a reader hot line for information of interest to the computing community. Call us toll free at (800) 343-6474. Ask for Donovan White, assistant managing editor.

We can't be everywhere — but our readers are.

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With its announcement of a major line of office automation software products, IBM has set a standard for competitors in that tumultuous market to match, observers said/**8**

Three major banks have each taken different approaches to implementing the communications and processing power behind their home banking systems/**10**

McCormack & Dodge Corp. has announced a remote version of its Interactive PC Link microcomputer-mainframe link that provides real-time access to mainframe data through dial-up capabilities/**12**

A survey has found that the use of computer-based training in business and industry is booming/**13**

The election: Computers have made an impact at all levels of the political process . . . The Republicans are relying heavily on information processing in planning their daily strategies/**14-16**

One user of Perkin-Elmer Corp.'s OS/32 operating system is having second thoughts about committing his department to a full-scale PE upgrade/**18**

The private branch exchange market will be at the center of the battle between AT&T and IBM, according to a telecommunications consultant/**19**

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Undersize computers and numerous program changes have been cited as the causes of a major DP backlog at the Social Security Administration/**30**

A Chicago company's computer-based messaging and information system is targeting trade show attendees/**32**

The New York State College of Veterinary Medicine has developed a data base of 5,236 diseases that affect a variety of animals/**34**

In the Netherlands, Philips Telecommunications Industry B.V. recently launched what may be one of the largest private telephone networks in the world/**38**

A large corporate division suddenly cut off from its parent company's systems had its new financial management system running in a month with the help of an integrated software package/**44**

A publishing company that installed an office automation system in 1981 has seen its advertising volume rise 30% without adding staff/**52**

IN DEPTH

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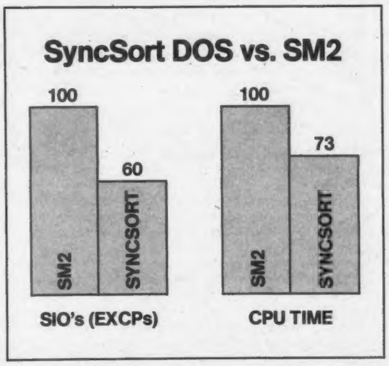

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VAX 8600 fulfills forecasts

DEC targets marketing strategy at IBM, leaves some question about 8600's testing

By Tom Henkel
CW Staff

MARLBORO, Mass. — The basics of Digital Equipment Corp.'s VAX 8600 announcement fulfilled predictions that most industry watchers had been making for some time. The unit offers up to 4.2 times the performance of DEC's VAX-11/780, uses chips based on emitter-coupled logic (ECL) and employs a four-stage pipeline architecture.

With the unveiling of the 8600, DEC appears to be taking on a slightly different marketing technique, namely, going head-to-head with IBM. For example, part of DEC's presentation at the system's unveiling included a comparison of the VAX 8600 in a Vaxcluster configuration with IBM's high-end 3084 processor.

Asked directly whether DEC was planning an all-out assault on IBM's product line, DEC President Kenneth Olsen replied, "What do you think we have been doing for the past two years?"

The reason DEC appears to be setting its sights on IBM is that it needs to make heavier inroads into the commercial sector in order to grow, noted Frank Gens, an analyst with the Boston-based Yankee Group market research firm. Gens explained that DEC has done very well in marketing its systems to the scientific and engineering communities, but has not enjoyed as much success with commercial accounts. With IBM the clear leader in the mainframe processor market, Gens said, IBM is the obvious target from which to steal customers.

The company had been criticized for being late with its high-end announcement, and at the press conference last week where DEC unveiled the 8600, Bruce A. Ryan, VAX systems marketing manager, confirmed that while the machines have been tested internally, none have actually been shipped to field test sites.

During a question-and-answer session, Ryan was asked how DEC could be sure that last minute problems would not delay first shipments of the VAX 8600. Ryan replied DEC had used sophisticated computer-aided design and manufacturing and simulation techniques to develop the VAX 8600.

Identity crisis

One question about the VAX 8600 that probably will not be answered until DEC unveils additional models is whether the 8600 is a true successor to the VAX-11/780 line or a souped-up version of the old product. The VAX 8600 uses the same instruction set and the current version of DEC's VMS operating system, which implies the new processor is extremely similar to the older units.

On the other hand, the VAX 8600 employs some innovations such as 256K-byte memory chips, ECL chips and a floating-point accelerator. DEC also claimed that the 8600 is more reliable than the older VAX products. Robert M. Glorioso, DEC's manager of high-performance systems and clusters, said the implementation architecture of the VAX 8600 is quite different from the older VAX products, but the actual systems architecture is quite similar.

One omission from DEC's VAX 8600 presentation could possibly indicate more ruffled feathers for users of Decsystem mainframes. DEC angered some Decsystem users when it said Decsystem users would have to look toward the VAX line for processors to replace aging Decsystem mainframes. DEC has promised Decsystem users more software bridges to allow their systems to coexist with the VAX line, rather than forcing them into an all-out conversion, but no mention of the Decsystem processors or additional bridges was made during the 8600 announcement.

Decsystem-20 users enhance systems, study replacements

By Paul Korzeniowski
CW Staff

Eighteen months after Digital Equipment Corp. announced that it would not produce a successor to its Decsystem-20 series mainframe line, Decsystem-20 MIS managers interviewed by *Computerworld* reported that they are content with present systems and are evaluating replacement options.

Last year, DEC told users that the migration path for Decsystem mainframes would be DEC's VAX line of superminis. The news surprised some Decsystem users, who contended they were being forced into making a software conversion. Several months later, DEC enhanced Decsystem processors with the aim of offering Decsystem users more performance.

While DEC maintained that Decsystem users would still have to look to the VAX line for future upgrades, DEC also stated that it planned to develop software bridges to allow Decsystem programs to coexist with the VAX environment. Last week, DEC announced its largest VAX processor to date (see story page 1), but made no mention of what impact the newly announced processor will have on Decsystem users.

Computerworld spoke with some Decsystem users to gauge their reactions to the announcement. H. W. Klingensmith, director of Case Western Reserve University's Jennings Computer Center in Cleveland, predicted that it will take at least five years before Case Western replaces its five Decsystem-20s.

"We are attempting to set up a complete distributed processing environment," he said. "When it is completed, our Decsystem-20s may be able to provide the central communications processing. If DEC drops its Decsystem-20 support, we may be able to buy additional 20s for parts and maintain our systems."

William Hamilton, assistant director at the University of Arizona's Health Science Center in Tucson, Ariz., reported that his department has begun to move some applications from its Decsystem-20 to a VAX superminicomputer.

The University of Arizona's actions probably mirror DEC's plans, Klingensmith said. "DEC will attempt to move all of its users to the VAX line. . . . It will eventually phase out other systems like the PDP-11. This may be good business sense, but it does not provide users with a complete range of solutions." Klingensmith added that Case Western may not follow the university's example.

Steve McBride, MIS director at Fleetwood Enterprises, Inc. in Riverside, Calif., may look to IBM rather than DEC for a Decsystem-20 replacement.

Current Decsystem-20 users have not yet been left in the lurch as DEC has provided users with a number of enhancements. The enhancements include improved disk drives, 64K-byte chips that replace 16K-byte chips and a common file structure that allows a user to access any file on a network; previously, the user was limited to files stored on the host.

Although Klingensmith is happy with the recent enhancements and with the service that DEC has provided his staff, he is realistic about the recent upgrades. "Most of the upgrades were also announced for the VAX line," he noted. "They were spin-offs from the VAX line rather than products designed for the Decsystem-20."

He does not expect many additional enhancements, but deemed better communications tools between a Decsystem-20 and a VAX as necessary enhancements. Poor communications was the principal reason why Fleetwood is looking at an IBM 4300 series processor, Klingensmith said.

DEC

from page 1

cache, as opposed to the 8K-byte write-through cache on the 11/780. The write-back cache is said to allow the processor to continue at full speed without waiting for the main memory to be updated. All memory-to-CPU transfers in the 8600 travel over a dedicated memory bus. A separate I/O bus, the Synchronous Backplane Interconnect, feeds data to the CPU.

A high-speed dual-path bus called Computer Interconnect is said to allow VAX 8600 systems to run in Vaxcluster configurations of up to 16 CPUs with the VAX-11/750, 780 or 785 machines and DEC's HSC50 intelligent storage controller subsystem.

To support VAX systems in the Vaxcluster environments, the 8600 incorporates enhancements in Version 4 of VMS announced several months ago. The enhancements include clusterwide batch and print queuing, a Distributed Lock Manager to synchronize the activity of users in interactive data base applications, support for larger files and longer file names, more data security features and a Distributed File System to provide access to files stored on disk subsystems anywhere within the cluster.

The Digital Network Architecture (DNA) is also offered for the 8600 as well as other VAX systems. DNA is said to support Xerox Corp.'s Ethernet local-area networking, Decnet wide-area networking, X.25 data-switching networks, private branch exchange interconnect capabilities and gateways to non-DEC networks.

The reliability of the 8600 is supported by a high-speed diagnostic bus. The product is scheduled for shipment in April.

The $576,000 price for an entry-level 8600 system includes an integrated floating-point accelerator, 12M bytes of main memory, an integrated controller and adapters for 104 asynchronous communications lines; synchronous line and line printer ports, the company's HSC50 mass-storage server and star coupler, licenses for the VMS operating system and Decnet, a 456M-byte RA81 disk drive, TA78 magnetic tape transport and console terminal.

The price for the largest 8600 system with all the components of the entry-level system and another 20M bytes of main memory, nine more RA81 disk drives, another TA78 tape transport and asynchronous line adapter is $970,000.

For customers who want to upgrade an existing Vaxcluster system, a VAX 8600 configuration is available that contains all components of the entry-level system without the star coupler, storage server, disk and tape drives. The price for this configuration is $450,000, or $351,000 for the 8600 CPU and $99,000 for the other components, the company said.

DEC is located at 146 Main St., Maynard, Mass. 01754.

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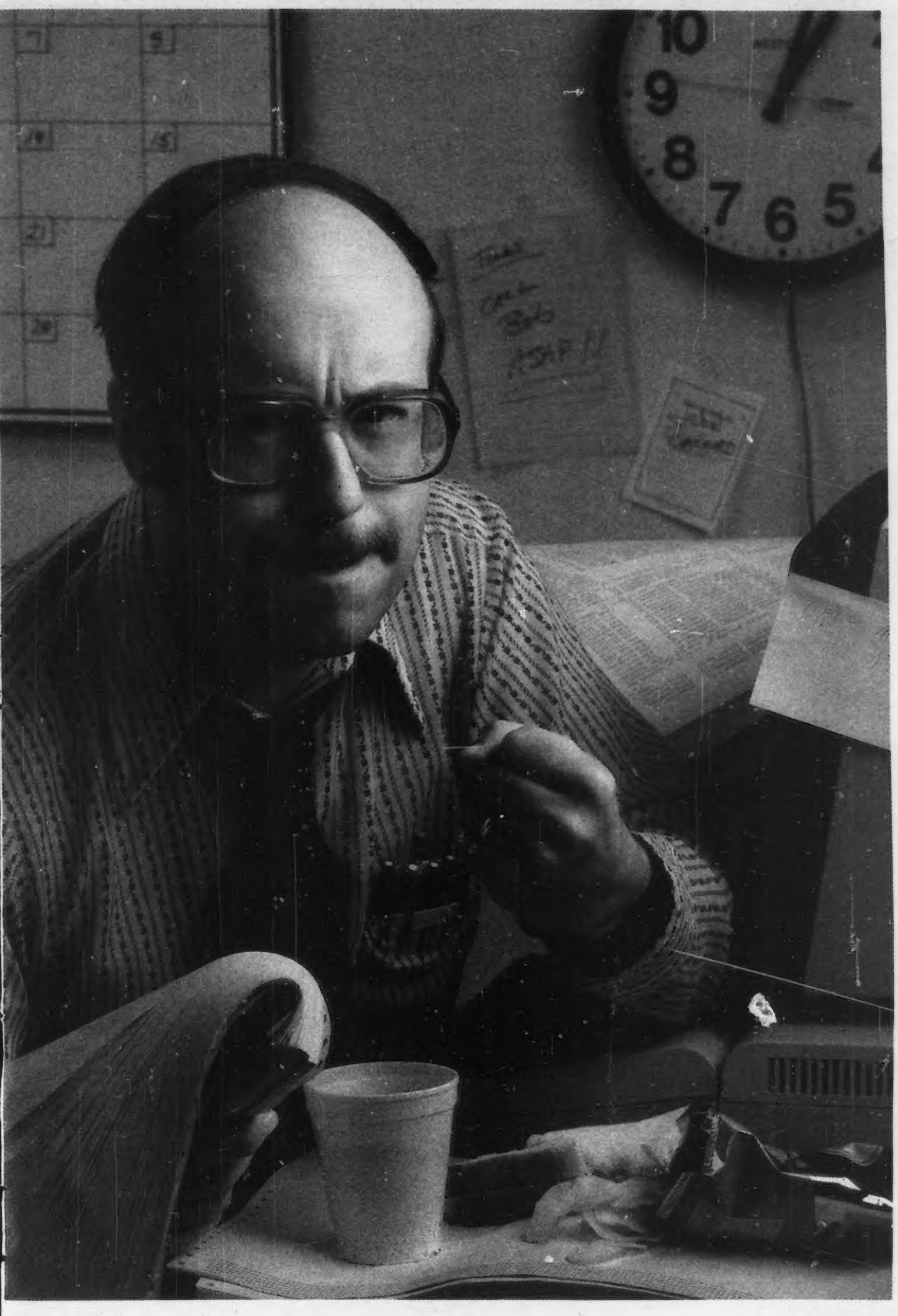

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Users voice concerns as STC retreats to bankruptcy act

By David Olmos
CW Staff

Storage Technology Corp.'s (STC) announcement last week that it will seek cover under the Federal Bankruptcy Act seems to have surprised few of the company's customers, but it has fueled uncertainty about the future of the storage device manufacturer.

In telephone interviews last week, STC customers expressed optimism that the company will emerge from bankruptcy proceedings as a viable company. They also said they hope customer service will not suffer as a result.

"It's not good news," said David Morgan, assistant director of data processing for the city of Anaheim, Calif. "Whether it's going to have a serious impact on our service, I don't know. Time will tell us that.

"I would describe the reaction as one of uncertainty and concern," he continued. "We've been watching [STC's] problems for the last several months, so it's not really a surprise."

Bob Lott, data center manager for ITT's Communication Services Group in New York, said the demise of STC "is not a big worry now, but if a downward trend continues, it's going to be.

"I'm locked into [STC] by contract for another year and a half, and we're a very tape-oriented shop. If [its] service further deteriorates, or if parts availability deteriorates, it's going to be one heck of a problem, he said."

> *'The STC reorganization should have no impact on users. The existing service organization will obviously remain in place.'*
> — James Porter, president of Disk/Trend, Inc.

Lott asserted that in the two years his company has been using STC tape drives — a period in which STC has been shaken by financial setbacks and large layoffs — customer service "has effectively gone down the drain."

He said his company is considering replacing its 24 STC 3670 tape drives when the current contract expires. "We are looking at other vendors — IBM, specifically," Lott said.

Other STC users interviewed reported no problems with service.

James Porter, president of Disk/Trend, Inc., a market research firm in Los Altos, Calif., said the STC reorganization should have no impact on users. "The existing service organization will obviously remain in place."

Carl Reynolds, vice-president of communications and data processing at Hughes Aircraft Co. in Long Beach, Calif., said he will act cautiously before purchasing additional STC devices. "One needs to have economically viable vendors," he noted.

"I'd be terribly surprised if that big a company, with a generally good performance, would be allowed to disappear," he said. "On the other hand, I'm not going to rush out and give them a lot of orders today."

Jesse Slayden, director of computer operations for the Tennessee Department of Finance and Administration in Nashville, expressed disappointment over STC's demise. "Maybe it's wishful thinking, but I don't anticipate it will have that much of a direct effect on my realm," he said.

STC

from page 1

the company said it expected to post a $20 million loss and would cut its work force by 10%.

In a statement issued last week, Jesse I. Aweida, chairman and chief executive officer of STC, said: "The reorganization filing best serves the long-term interests of the corporation's current and future customer base by assuring its ongoing ability to meet the corporation's customer needs."

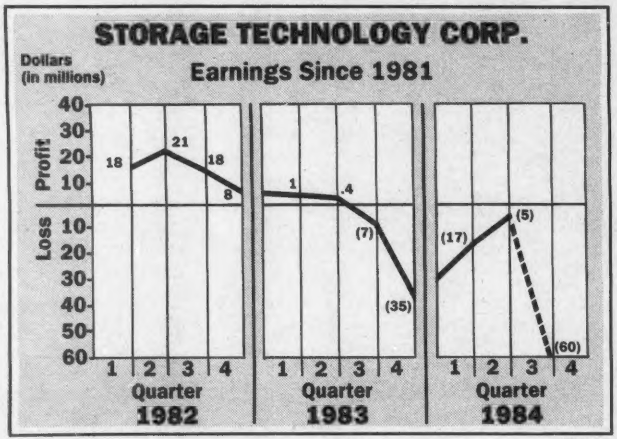
STC started out in 1969 as a manufacturer of storage tape products. After IBM announced in 1981 its 3380 disk drive using thin-film head technology and then ran into technological problems that stalled volume shipments for two years, STC was able to "double and redouble" the capacity of its 8350 disk drive and offer a dual-density version, said Thomas Crotty, an analyst with the Gartner Group, Inc. That opportunity enabled STC to grow to more than $1 billion in sales in 1982 and embark on expensive development projects in new areas.

Those projects included an attempt to develop a plug-compatible mainframe, an optical storage disk project, a new tape drive and a competitor to IBM's 3380, the STC 8380. The mainframe project was scrapped earlier this year [CW, Feb. 6] and sparked a number of lawsuits from investors in a development partnership set up by STC to fund the project. The optical storage project schedule was pushed back because of funding problems and the 8380 ran into technological problems and "was more than two years late," Crotty said. For fiscal year 1983, STC reported a loss of $41 million, including a $31.5 million write-off for the mainframe project.

Carol Lerner, an analyst with International Data Corp., said recent IBM price cuts for its 3380 drive put a squeeze on STC's margins from sales of the 8380 drive that was just ramping up to full production this year.

"We heard [STC] was selling the 8380 for just about nothing — less than what it cost to manufacture it," she said. According to Lerner, the company had installed just 40 8380s at the end of 1983, and by June of this year, it had shipped only 1,000 of its 1984 target of 6,000 units.

The analysts agreed that it is possible STC could come out of Chapter 11 in some viable form, but with a sharply reduced focus — perhaps aimed solely at the magnetic tape area, where it had early success.



CW CHART

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The downhill track

- June 1981 — Storage Technology Corp. (STC) reaches agreement with Exxon Corp. to acquire Exxon's Star Systems Division.
- November 1981 — STC stock hits a high of $40.37 per share.
- January 1982 — Cancels pending merger with Magnuson Computer Systems, Inc.
- November 1982 — Lays off 400, blames recession.
- March 1983 — Announces 500 layoffs for 8,135-person Louisville, Colo., facility.
- January 1984 — Abandons 2½-year plan to build mainframe computer.
- Aug. 15, 1984 — Stock falls to $9.75/share.
- Aug. 30, 1984 — IBM cuts prices on its advanced line of disk drives.
- Oct. 9, 1984 — STC predicts third-quarter loss of $20 million, thus violating the company's loan agreements with its banks. Stock price drops to $6.88 per share.
- Oct. 15, 1984 — Lays off 1,500 workers.
- Oct. 31, 1984 — Files for bankruptcy under Chapter 11, predicts third-quarter loss at $60 million.

Cobol compiler for micros earns kudos from user

By Paul Gillin
CW Staff

In benchmarks at Bankers Trust Co. in New York recently, an IBM Personal Computer-based Cobol compiler wiped out the competition, according to the consultant who performed the tests. "It was like a sports car compared [with] a Volkswagen," consultant Howard Targonsky said.

In a test using the Sieve of Eratosthenes, a standard test routine that calculates prime numbers, the optimizing Cobol compiler from Realia, Inc. of Chicago ran in 18 seconds, compared with 126 seconds for its closest competitor and 501 seconds for the slowest compiler tested, Targonsky said. Execution times on the standard Gibson Mix benchmark showed Realia to be four times faster than its competition.

At McDonnell Douglas Automation Co.'s (McAuto) Architectural Engineering and Construction Unit in St. Louis, Realia Cobol has enabled developers to move a project management package from an IBM mainframe to the IBM Personal Computer XT. Before the compiler was available, the program could only have run on a Personal Computer XT/370 under IBM's VM/PC operating system, according to Ken Ray, senior section manager.

Better performance than IBM Cobol

"Until I used Realia Cobol I hadn't seen a language for the micro that is large enough, maintainable enough and fast enough to be appropriate for large applications on the [Personal Computer]," Ray said. "We are getting two to three times better performance on the XT with Realia than we did on the XT/370 with [IBM's] VS/Cobol."

As a result of the benchmarks at Bankers Trust, Realia Cobol has become the basis for the company's Programmer's Workbench project, a hardware/software combination the company has developed for data processing use. The workbench includes a Personal Computer XT; Realia Cobol; Command Technology Corp.'s SPF-PC, a version of IBM's System Productivity Facility for the micro; and Information Builders, Inc.'s PC/Focus.

The Programmer's Workbench is intended to off-load some of the programming burden from the mainframe by distributing editing and debugging to micros, Targonsky said. A cost-benefit analysis showed that each Programmer's Workbench can effect a savings of $10,000 in the first year alone.

Realia Cobol was selected as the standard compiler for the workbench after tests against MBP Software & System Technology, Inc.'s MBP Cobol; Micro Focus Ltd.'s Level II Cobol; Ryan-McFarland Corp.'s RM/Cobol; and Microsoft Corp.'s Microsoft Cobol compilers. Not only did Realia outperform the competition, but it offered better debugging facilities and nearly complete compatibility with IBM's VS/Cobol on the mainframe, Targonsky said.

McAuto's Ray said Realia Cobol, "would be my compiler of choice of all the Cobol compilers I've ever used." He said Realia is made up of "a good mix of VS/Cobol, the current Ansi standard and the proposed Ansi standard." In addition, he said the Realia editor is so good that programmers who use it will probably not want to go back to the IBM mainframe editor.

Realia's interactive debugging package allows the user to watch the source program as it executes, Targonsky explained. At any breakpoint the user can display a data name definition or display and modify a break-point value. Realia Cobol also employs a debugging menu so that procedures can be called up and executed with fewer keystrokes, he added.

The compiler supports a color display and includes a feature that allows output to be viewed on two monitors simultaneously, he said. One monitor displays program output while the other shows the debugger screen.

'Easy to track where you are'

"It's very easy to keep track of where you are," Targonsky observed. Ray agreed, saying that most programmers in his unit have switched from using the IBM source editor on the Personal Computer to the Realia editor.

The combination of the interactive debugger and useful error messages made the Realia compiler the fastest overall for program development, Targonsky said. Even when a program was compiled using all the Realia options, it outpaced the competition by a factor of two to one.

The only incompatibilities between Realia Cobol and VS Cobol are a function of the greater mainframe capacity, Targonsky observed. Realia Cobol, for example, does not support SORT/MERGE statements, communications or the Cobol report writer. The only difficulty Bankers Trust has encountered compiling Realia code on the mainframe is an occasional error message on the SELECT statement, he said.

Ray concurred that VS/Cobol has different procedures for handling IF/THEN statements and collating sequences. But he added that Realia "is the most compatible compiler [with VS/Cobol] that we've found."

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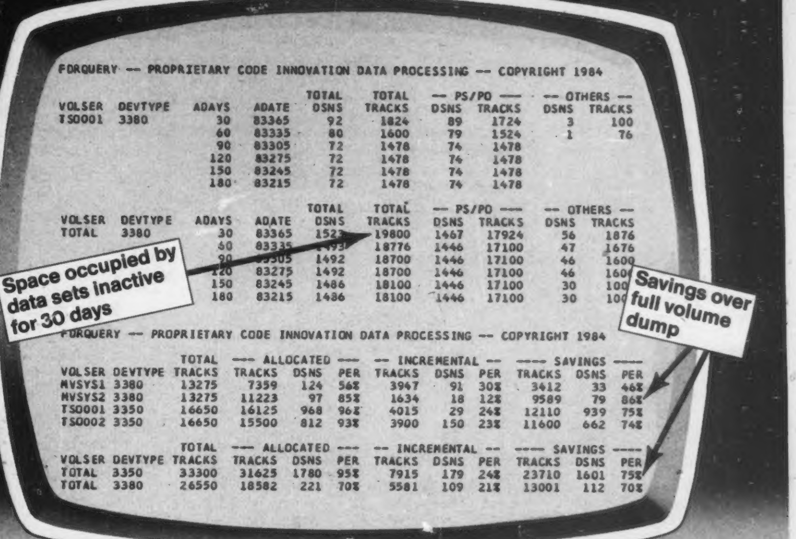

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                                  TOTAL    TOTAL    -- PS/PO --    -- OTHERS --
VOLSER   DEVTYPE   ADAYS   ADATE   DSNS    TRACKS   DSNS  TRACKS   DSNS  TRACKS
TSO001   3380         30   83365     92      1824     89    1724      3     100
                      60   83335     80      1600     79    1524      1      76
                      90   83305     72      1478     74    1478
                     120   83275     72      1478     74    1478
                     150   83245     72      1478     74    1478
                     180   83215     72      1478     74    1478

                                  TOTAL    TOTAL    -- PS/PO --    -- OTHERS --
VOLSER   DEVTYPE   ADAYS   ADATE   DSNS    TRACKS   DSNS  TRACKS   DSNS  TRACKS
TOTAL    3380         30   83365   1523     19800   1467   17924     56    1876
                      60   83335   1493     18776   1446   17100     47    1676
                      90   83305   1492     18700   1446   17100     46    1600
                     120   83275   1492     18700   1446   17100     46    160
                     150   83245   1486     18100   1446   17100     30    100
                     180   83215   1486     18100   1446   17100     30    10
FDRQUERY -- PROPRIETARY CODE INNOVATION DATA PROCESSING -- COPYRIGHT 1984

                  TOTAL   --- ALLOCATED ---   -- INCREMENTAL --   ---- SAVINGS ----
VOLSER DEVTYPE   TRACKS   TRACKS  DSNS  PER   TRACKS  DSNS  PER   TRACKS  DSNS  PER
MVSYS1 3380       13275     7359   124  56%     3947    91  30%     3412    33  46%
MVSYS2 3380       13275    11223    97  85%     1634    18  12%     9589    79  86%
TSO001 3350       16650    16125   968  96%     4015    29  24%    12110   939  75%
TSO002 3350       16650    15500   812  93%     3900   150  23%    11600   662  74%

                  TOTAL   --- ALLOCATED ---   -- INCREMENTAL --   ---- SAVINGS ----
VOLSER DEVTYPE   TRACKS   TRACKS  DSNS  PER   TRACKS  DSNS  PER   TRACKS  DSNS  PER
TOTAL  3350       33300    31625  1780  95%     7915   179  24%    23710  1601  75%
TOTAL  3380       26550    18582   221  70%     5581   109  21%    13001   112  70%
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IBM offerings challenge rivals to match OA technology

By Paul Gillin
CW Staff

IBM's announcement of a bevy of new office automation products late last month [CW, Oct. 29] established the giant as a major new vendor in that arena. It will also force the traditional office automation vendors to scramble to offer new levels of IBM compatibility, according to analysts contacted last week by *Computerworld*.

Most observers saw the string of announcements — which included new versions of IBM's Displaywrite word processing package (see story page 61) for the IBM Personal Computer and System/36 and improved facilities to tie disparate IBM workstations together through System/36-based networks — as an important move by IBM to fill a gaping hole in its OA strategy.

"It's the first time we've seen strategic OA software products from them based on strategic hardware and networking products," said Frank Gens, an analyst at the Yankee Group, a Boston-based consulting firm. "IBM has offered nothing in the way of coherent office strategies until now."

Eduardo Stecher, vice-president of advanced systems technology at Software Research Corp., a network service and software company in Natick, Mass., said the new products will offer unprecedented compatibility among previously incompatible IBM OA products. "Now 3270 users connected to the mainframe with [IBM's Distributed Office Support System (Disoss)] can edit documents created by [IBM] 8100s, 5520s, [Personal Computers and Professional Office Systems] users," he said. "It puts all users on the same level of information content compatibility."

That continuity is available at the document interchange level through Disoss and at the content level through IBM's Document Content Architecture (DCA). In affirming its commitment to DCA, IBM has applied pressure on its competition to meet those standards, observers said.

"The competition is in a rough position. The others either have to change their word processors to accommodate a format that's fully compatible with IBM Displaywrite or keep their own structures and offer both a mechanism to transform into IBM format and an interface to Disoss," Stecher said.

> *'Now they'll [IBM's competitors] have to sell on the merits of their product rather than on the lack of an IBM product.'*
>
> — Amy Wohl, Amy D. Wohl & Associates

Amy Wohl, president of Amy D. Wohl & Associates, an office automation consulting firm in Bala-Cynwyd, Pa., said the announcements are significant to the OA market on four levels. "It's a continuing commitment to the IBM statement of direction to tie everything to everything in the office," she said. "It's a further commitment to DCA as a standard document protocol. It dictates which word processing package to use [Displaywrite] if you want to play in this market. And it should give the competition fits."

Wohl said IBM's OA competitors "have been playing in the window left open by IBM in the office. Now they'll have to sell on the merits of their product rather than on the lack of an IBM product."

That will be a major task because IBM's new OA products will probably be functionally similar to competing systems, observers said. "IBM, which had weak to no product offerings in OA, now has an adequate offering and the beginnings of a good offering," Gens said.

Furthermore, Gens said, IBM has the advantage of having a strong base for its OA products in its System Network Architecture (SNA), something the other vendors cannot match. "Smart users are now looking beyond just office systems and looking at office networks," he said. "IBM started with SNA as a base whereas other vendors started with OA functions as a base."

Now that IBM has showed its hand on its strategic OA architecture, the pressure will be on other vendors to conform, said Ken Harvey, president of Computer Systems Planning by Ken Harvey, Inc. in Toronto. "I'm sure everybody will be feeling some pressure to standardize on something from IBM," he said. "This will increase the tendency for people to seek shelter under that Big Blue umbrella."

While this will not make life easier for the competition, the existence of a standard could bring some stability to the market, Harvey added. "It could simplify life for some vendors because if you can interface with IBM's standard protocols, you can now communicate with their spaghetti factory of protocols."

Of equal importance is the emergence of IBM's Displaywrite word processor as a standard across its hardware line. In addition to unveiling Displaywrite 3 for the Personal Computer and Displaywrite/36 for the System/36, IBM announced plans to release Displaywrite/370 for its mainframes in mid-1986.

Micro-to-small mainframe hardware compatibility is a feature the competing OA vendors have long stressed.

Some IBM OA software offerings conspicuous by their absence

As they sifted through a stack of more than 20 office automation software products announced by IBM late last month, observers also noted some announcements that were conspicuously absent.

Although IBM has tightened communications between its Personal Computers and its System/36 minicomputers, it has failed to integrate the features of the two systems, noted Amy Wohl, president of Amy D. Wohl & Associates, a Bala-Cynwyd, Pa.-based OA consulting firm. "For example, graphics on the System/36 are not available on Displaywrite 3 [on the Personal Computer]. You can only access the graphics by going back into terminal mode."

Wohl also said the user interface on the new Personal Services software is cluttered and confusing. She noted with disappointment that IBM's new Topview windowing environment on the Personal Computer cannot be run when attached to the System/36.

Michael Zisman, president of Soft-Switch, Inc. in King of Prussia, Pa., said he was surprised that IBM did not announce an optimized word processing keyboard for the Personal Computer.

Eduardo Stecher, vice-president of advanced systems technology at Software Research Corp., a network service and software company in Natick, Mass., said it was not clear if the interface from the Personal Computer to IBM's Distributed Office Support System is bundled into Displaywrite 3 or offered as a separate option. If the connection is bundled, it will encourage users to migrate to Displaywrite rather than continue using their current word processors, he said.

Software handbook available

MADISON, Ga. — Information on more than 500 software programs designed for manufacturing environments has been made available in the recently released *1985 Handbook of Manufacturing Software.*

According to the publisher, SEAI Technical Publications, the handbook describes programs targeted at inventory control, computer-aided design and manufacturing, robotics and process control. The publication also covers fundamental techniques for applying computers to the manufacturing environment.

The *1985 Handbook of Manufacturing Software* is priced at $190 and is available from SEAI Technical Publications, P.O. Box 590, Madison, Ga. 30650.

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Banks follow divergent paths on road to home banking

By Edward Warner
CW Staff

As bank after bank scrambles to offer home banking services, their data centers are faced with twin challenges: communicating data from mainframes to customers' personal computers and handling the increase in transactions.

To cope, three banks that introduced home banking services this year have each chosen different paths. New York's Manufacturers Hanover Trust Co. bought new minicomputers and communications software. Penn Security Bank and Trust of Scranton, Pa., bought no new processors and developed its communications software in-house. And Shawmut Corp., operator of a group of Massachusetts banks, chose to offer its Arrive home banking service via Compuserve Corp.'s Compuserve network, thus avoiding the need for either new computers or a communications link to customers.

New York's Manufacturers Hanover Trust offers the latest of the three new home banking systems, Excel Personal Financial Management. The service has the potential to be one of the largest in a city of thousands of personal computer users, according to James L. Bauer, vice-president and director of home information services. That was one reason, he said, why the bank chose to buy four Tandem Computer, Inc. TXP minicomputers and communications and bill payment software from Applied Communications, Inc. (ACI) of Omaha.

Another reason, added Carl Morales, senior vice-president for retail banking systems at Manufacturers Hanover Trust, is that "philosophically, when we have a business need for a new service, we prefer to go to the marketplace." Those products are then used as a base or springboard for in-house enhancement, he said.

Of the four minis, Morales noted, two will be used for development and maintenance of the ACI software. That software permits communications to the other two new minis, the machines that provide the on-line portion of the Excel service. The software also performs the service's bill payment functions.

Penn Security Bank and Trust, a much smaller bank, decided, however, that its existing processors were sufficient to handle the communications and transaction load and chose to have one of its programmers spend a year writing the system's communications and applications software. Bank President Otto Robinson said Penn Security went that route because it liked "the great productivity" of the IBM System/38, the bank's mainframe, and it also wanted to keep the project's cost down.

In the end, he said, Penn Security's People Server home banking system cost the bank about as much as one automatic teller machine.

An additional reason why Penn Security developed its home banking system in-house, Robinson noted, is because the bank wanted a system tailored to its own needs and able to offer out-of-the-ordinary services. In addition to the standard features of most home banking services — such things as account balance inquiry and intrabank funds transfers — the 125 customers of People Server also get access to screens of free classified advertisements and an electronic bulletin board of community events.

People Server and Excel also differ in the role they place on their system's minicomputers. People Server, which came on-line in April, uses two IBM Series/1 minis as intermediaries, converting protocol between the customer's home computer or terminal and the bank's System/38, where actual account inquiries and transactions take place.

Manufacturers Hanover Trust, however, places most of the on-line features of Excel, except bill paying, directly on a pair of its four Tandem minis. A 9,600 bit/sec concentrator, or base-24 videotex controller, is used to speed communications from the Tandem TXPs to customers. The bank's four NCR Corp. Criterion 8500 series mainframes execute Excel's customer account debiting in batch mode.

The big difference between Shawmut's Arrive home banking system, which premiered in August, and other recent arrivals in the home banking arena is its reliance on an existing computer communications network, Compuserve, based in Columbus, Ohio. Though hundreds of miles separate the Compuserve mainframes from Shawmut's Boston headquarters, Janet Pruitt, vice-president for electronic banking products at Shawmut Bank of Boston, argued that Arrive and other home banking systems are essentially similar. "The only difference is [that] we transmit our data to Columbus," she said.

Pruitt said Shawmut uses one of the Compuserve mainframes to store its data base of Arrive customer account records in the same way that most banks use a separate in-house computer as the basis for their home banking systems. Each day, the account balances of Arrive customers are transmitted to the Compuserve computers, and at the end of each banking day, the transactions of Arrive users are uploaded to the Shawmut mainframes for balancing accounts, she explained.

Arrive customers access their accounts via their personal computers by dailing the same local telephone number as other Compuserve users. Like other Compuserve users, they pay for their connect time.

Customers of Penn Security's People Server home banking system, however, pay nothing for the service unless they use it for more than a set number of hours each month.

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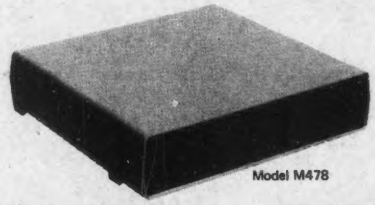
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Home banking: an upcoming movement

By Edward Warner
CW Staff

As most bankers tell it, home banking, the system that gives bank customers access to their accounts via a personal computer, may be the greatest thing since paper money.

Charles Forbes, vice-president of the Electronic Banking Division of New York's Chemical Bank, said Pronto, the home banking service Chemical pioneered in early 1982, has given the bank an important strategic advantage over its competitors.

More than 10,000 customers — 16% of whom had never banked with Chemical — are now each paying $12 a month to receive the Pronto service on their Chemical accounts, he said.

Perhaps more important, he added, while the average Chemical account holder has 1.4 types of accounts with the bank, the average Pronto user has 3.9 accounts. Those additional accounts could be for such services as certificates of deposits or individual retirement accounts — business that might otherwise have gone to another bank, he said.

Chemical now licenses Pronto to eight other U.S. banks.

Near 'bank revolution'

While stopping short of calling it a "revolution in banking," Shawmut Bank of Boston's Janet Pruitt said "anyone — publishers, retailers — has got to be aware of the trend [of] personal computers in the home."

Pruitt said she believes widespread use of personal computers as home banking terminals may be five to 10 years away, but that the bank found it better to establish its Arrive system now "than [play] catch-up."

One bank president, Otto Robinson of Penn Security Bank & Trust Co. in Scranton, Pa., said he was so impressed with the prospects of home banking that he believed banks should develop videotex systems as well. Pointing to what he called videotex market research, Robinson said researchers found people want transactions from videotex systems. "If transactions are going to be the driving force for these videotex systems, then the banks should develop them," he said.

Nationally, 18 firms, most of them banks, are either developing or operating home banking systems, according to a survey by Arlen Communications, Inc. of Bethesda, Md.

One bank, though, has had second thoughts about entering the home banking arena. Horizon Bancorp of Morristown, N.J., has postponed the start-up of its Horizon Home Banking system indefinitely. A spokeswoman declined to discuss the reason for the bank's decision.

Midwestern management conference set

ROSEMONT, Ill. — Two exhibitions and conferences will take place at the O'Hare Exposition Center here Feb. 20-22, near Chicago's O'Hare International Airport.

The conferences are designed to acquaint executive end users and MIS/DP managers of Midwestern manufacturing industries, businesses and institutions with developments in computers, communications fields and software.

The Info/Central: Information Management Exposition & Conference will offer exhibits that include a variety of computers, telecommunications systems and office automation products.

Sessions will cover topics related to applications prototyping, computer law, office automation, fourth-generation languages, decision support systems, micro-mainframe links, image processing and relational data base technology.

Info/Software: The Information Management Exposition & Conference for Software will be running alongside the Info/Central meet in the same hall and on the same dates.

The exhibition will be devoted to software for all sizes of computers and all applications geared to MIS/DP people and executive end users in businesses.

Topics included in the sessions will be:

- Microcomputers in large organizations.
- Systems development methodology.
- Use of AT&T's Unix operating system in business.
- Human resource management.
- Software for manufacturing companies.
- Productivity software.

The price of either conference is $310 for three days, $165 for one day and $90 for a half day. Subscribers to either conference have access to the sessions and exhibitions of both.

More information is available from Show Manager, Info/Central or Info/Software, 999 Summer St., Stamford, Conn. 06905.

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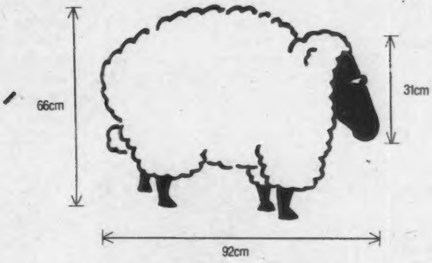

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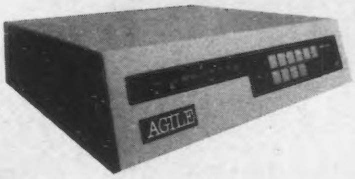

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Dial-up access extends M&D's micro-mainframe link

NATICK, Mass. — McCormack & Dodge Corp. gave users of microcomputers at remote locations micro-mainframe link capabilities with the introduction last week of a full-featured version of its Interactive PC Link, said to allow real-time access to mainframe data over dial-up lines.

According to a spokesman, Remote PC Link provides two-way communication between any IBM mainframe file and IBM PC-DOS- or Microsoft Corp. MS-DOS-based micros through all common carriers, including public switched telephone lines and leased lines. Mainframe access is accomplished by an automatic dial-up to the host site by modem-to-modem connection.

A Remote PC Link user can initiate mainframe queries for on-line reporting or can download selected mainframe data to the micro. Data can be analyzed and manipulated with micro-based applications and uploaded via the modem connection to the mainframe.

The product is said to provide all the capabilities of M&D's local Interactive PC Link and can be used independently of the local link, provided the mainframe portion of Interactive PC Link is in place. The mainframe software provides security facilities that can be defined by DP.

As with Interactive PC Link, the spokesman said, Remote PC Link provides universal access to any mainframe file through IBM's CICS for on-line reporting or downloading, and it allows for real-time uploading of micro-generated data to any M&D mainframe application file.

Selection, reporting capabilities

Remote PC Link also gives users the ability to select the mainframe data to be downloaded via menus and provides for summarization and sorting of mainframe data before downloading. The link's on-line reporting capabilities allow a user to select and review mainframe data without physically downloading the information to the micro.

The spokesman said a Remote PC Link kit includes Microcom, Inc.'s SX 1200 error-checking, 1,200 bit/sec modem and either Lotus Development Corp.'s 1-2-3 spreadsheet or Symphony integrated microcomputer software package. Operation of the remote micro-mainframe link requires 256K bytes of micro memory. To communicate with the micro, the host site must be equipped with a modem connected to a protocol converter, which in the M&D package is an Avatar Technologies, Inc. PA 1000 Turbo.

Existing Interactive PC Link users will receive an enhanced version of the mainframe link software, which has been upgraded to accommodate the remote link at no cost.

The Remote PC Link kit including 1-2-3 is priced at $2,200, and the kit including Symphony costs $2,400. The mainframe link portion for both Remote PC Link and Interactive PC Link is priced at $25,000.

M&D is located at 1225 Worcester Road, Natick, Mass. 01760.

Voice/data networks, teleconferencing to highlight Jan. 28-31 meet

WASHINGTON, D.C. — More than 200 exhibitors and more than 75 technical panel discussions will highlight the seventh annual Communication Networks Conference and Exposition here Jan. 28-31 at the Washington Convention Center.

Computer and telecommunications authority James Martin, author of 31 books, will be the keynote speaker. Also speaking will be William G. McGowan, founder and chairman of MCI Communications Corp.; Richard E. Wiley, former Federal Communications Commission chairman; John A. Roth, president of Bell-Northern Research, Ltd.; FCC Commissioner Dennis Patrick; and Arch McGill of Rothschild Ventures, Inc.

Among the topics to be discussed in presentations and panel groups are developments in voice and data network design, bypass technologies, regulatory issues, local-area networking and teleconferencing.

Conference registration before Dec. 14 is priced at $295 for any of the day-long Monday tutorials, including lunch; $595 is the cost for a Monday tutorial plus the entire conference; $395 is the cost for the entire conference without the Monday tutorial; and $195 is the cost for one day of the conference, including lunch. After Dec. 14, registration costs are $295 for the Monday tutorial, $645 for the tutorial and entire conference, $445 for the conference minus tutorial and $195 for one-day conference attendance.

Additional details are available from the Communication Networks Conference and Exposition, Box 880, Framingham, Mass. 01701.

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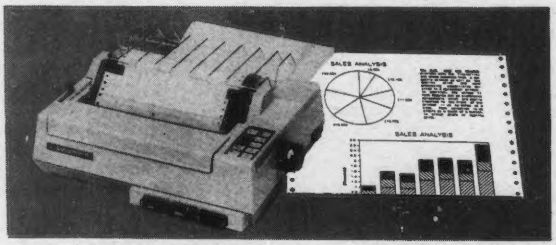

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Widespread CBT use found in business, industry

By Donna Raimondi
CW Staff

NEW YORK — Training quality, reduced tutoring costs, standardization and convenience were the benefits of computer-based training (CBT) use cited by business and industry in 1984, according to a recent survey.

Released by RSA Information Designs, Inc., a consulting and publishing firm here, "The Market for Computer-Based Training in Business and Industry — 1984" drew responses from 111 people in 102 Fortune 500 firms and government agencies. The respondents were training professionals and information management executives representing primarily manufacturing (37%) or financial service industries, including insurance (37%).

This year, 62% of the surveyed firms use CBT and 38% do not, which is a near reversal of RSA's 1983 finding that 40% of responding firms then offered CBT. Of the nonusers, more than a quarter plan to introduce the training within one year.

Most firms currently employ CBT in data processing (26%), technical skills (19%), software applications use (17%) and computer literacy training (15%). Users show a strong interest in adopting CBT to teach management skills and product/professional knowledge (35% of possible future offerings compared with 6% of current use).

Of the total surveyed firms, 37% report allocating from 1% to 10% of training budgets — including salaries — to CBT in 1984; 4% report allocating between 11% and 25% of their budgets. For current users only, more than half allocate 1% to 10% of their training budgets to CBT.

The survey's participants prefer to buy off-the-shelf courseware (55%) over in-house-authored material (27%) or custom-designed programs (14%). An equal number of nonusers either are not sure how they will obtain their courseware or they prefer to author in-house (29%), followed closely by those using off-the-shelf programs (27%).

Of the 63 firms using CBT, 59% have authoring systems and about half employ multiple authoring systems. IBM's Interactive Instructional System for mainframes accounted for 32% of authoring systems in use, followed by Goal Systems International, Inc.'s Phoenix — which is IBM mainframe-compatible — at 13% and IBM's Personal Computer Instructional System — which permits uploading to IBM mainframes — at 11%. In last year's study, microcomputer authoring systems compatible with Apple Computer, Inc. machines were most frequently in use; IBM-compatible systems dominated future choices.

IBM hardware leads as the equipment in use — whether microcomputer (35%) or mainframe (28%) — and as the brand name under consideration by 57% of nonusers for possible future use.

Microcomputers are most frequently used for CBT (49%), followed by terminals connected to a mainframe (44%). This is a switch from 1983, when terminals dominated with 51%, followed by microcomputers with 38%.

Thirty-one firms rated 13 commercially available authoring systems for their performance, vendor support services and overall satisfaction and found the products satisfying and the support services acceptable. Eighty-six percent of the firms would purchase another product from the vendors who sold them these systems.

Users most frequently cited courseware and authoring systems as the CBT areas needing improvements. Their comments indicate a concern with the quality of design and the need for more training.

More than half of the CBT users surveyed incorporated additional input or output media in their courseware. Color graphics was most frequently cited (35%), followed by videotape (26%). Current CBT users expressed an interest in adding videodisc (30%) and videotape (24%) as possible future options.

"The Market for Computer-Based Training in Business and Industry — 1984" is available for $225 from RSA Information Designs, 201 East 17th Street, New York, N. Y.

Help us figure the net's worth

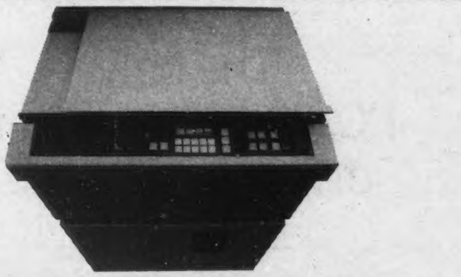
Are you lost in a forest of local-area or long-haul networks? Let *Computerworld's* February Special Report on communications networks update you on new network architectures, communications software, independent software and satellite communications.

Contributions to the Special Report should take one of two forms: a tutorial article or an application story.

Articles must be typed, double-spaced and range in length from four to six pages. Artwork is welcome.

Authors should include a brief biography and a telephone number. The deadline for submissions to the February Special Report is Dec. 28.

If you have a story or any questions, send them to Janet Fiderio, Special Reports Editor, *Computerworld*, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.



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ELECT from page 1

their vote in the biggest election of the quadrennium may be in vain. Even in a tight race, America will know the winner before bedtime.

Reagan

Mondale

The impact of computers on the election process was felt in the past political year, as candidates at all levels managed their offices with microcomputers and minicomputers; as the news media marshalled their staffs, tallied votes and maintained political data bases with systems as large as mainframes; and public election officials looked for their own microcomputers.

NBC News, which four years ago stunned its competitors by declaring Reagan the victor first, will have 4,000 workers spread throughout the U.S., interviewing voters in key precincts and telephoning those exit poll results to its New York election headquarters for transfer to a data base on an IBM 3081 mainframe in Cherry Hill, N.J.

"We have set up 250 terminals to receive polling information and key precinct vote information," reported Roy Wetzel, general manager of NBC's election information unit. The field workers who conduct the exit polls during the day will telephone results from key precincts as the votes are counted. Wetzel said a staff-developed program on the mainframe will compare those vote totals with the exit poll results and the pre-election polls.

When enough results match, NBC — and ABC News and CBS News, which are running similar programs — will know who won a state. When a candidate appears to have locked up 270 electoral votes, with all of a state's electoral votes pledged to the statewide winner, the network will declare a winner.

"We'd never project a winner on the exit polls alone. The margin of error, plus or minus 5%, is just too great. But when you combine that with the key precincts, 80% of which are received within 15 minutes of the polls closing, the margin of error is down to 2%," noted John Miller, data processing manager for ABC News.

Prior to 1980, the exit polls were used exclusively for purposes of analysis, not for projecting winners.

The networks, The Associated Press and United Press International receive raw vote totals (the official statewide tallies) from the News Election Service, a cooperative reporting service.

Wetzel noted that no technological breakthroughs are expected in the 1984 election coverage. But he added, "Maybe we take a lot of things for granted — things we work with every day. We take a lot of baby steps and don't notice how they add up." He cited the example of a Tandem Computers, Inc. Nonstop II superminicomputer, which NBC analysts use to store and retrieve historical information such as voting trends and candidates' biographies.

All three networks reported advances in how they used graphics during the campaign. Richard Silverman, deputy director of the CBS election and survey unit, reported that on-air graphics were slow to develop because the technology, with manual entry, grew out of television, not the computer field.

Each network is linking its graphics to its political data base, allowing such tools as changeable bar charts and automatic character generation for on-air displays.

Miller said information retrieval will be faster for the 1984 vote count because ABC correspondents and producers will use color-coded keyboards to call up generic reports. He said the IBM 3270 terminal keyboards are coded to help nontechnical users, at the touch of one or two keys, request reports such as updates on specific congressional races or on the success of minority candidates.

"People coming to cover an election after covering the pope and the space shuttle don't want a system that takes three or four days to learn to use," Miller said.

GSA micro buying guide out

WASHINGTON, D.C. — The U.S. General Services Administration (GSA) has published a 10-step guide to assist federal managers purchasing microcomputers.

"The End User's Guide to Buying Small Computers" was proposed by an interdisciplinary group from government and private industry which included program managers, a procurement specialist and an electrical engineer, according to GSA.

The guide is said to discuss basic concepts of end-user computing, cost/benefit analysis and hardware and software sources. Appendixes list hypothetical examples of the impact of standardization, networks, the GSA's end-user pilot project and records management.

Single copies are available free from Customer Liasion Unit, GSA Office of Information Resources Management, Washington, D.C. 20405.

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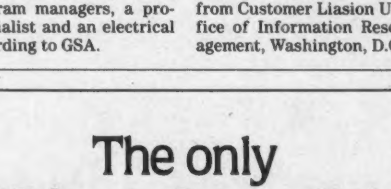

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Data base gives Republican campaign resource edge

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — In the presidential election year that culminates this week, the Republican campaign has set new performance standards in the application of information technology to support its candidates.

The Republican National Committee's Computer Services division has recorded voter lists from past elections and combined them with a demographic statistical data base that gives Republican campaigns "the most comprehensive data bases in the country," according to committee Director Thomas B. Hofeller.

The data base is built around a Digital Equipment Corp. Decsystem-2060 and a Wang Laboratories, Inc. VS 85 system for word processing. The two are linked, giving 75 users access to a variety of 95 terminal workstations.

However, it is the data base that is the marvel of all, including the Democrats, who have publicly praised its sophistication. In addition to the demographic voting history data base, the Republican committee has created a tracking data base of quotes, statements and positions of Democratic opponents that enables the Republican candidate to get an instant fix on an issue.

For example, a congressional campaign in Illinois can ask the committee for precinct voting records in past elections that are codified according to ethnic population groups.

"We can produce results on Hispanics, Poles, Lithuanians, Germans [and] Italians," Hofeller said, hastening to add that modern campaigning requires the use of information technology to bring the vote seeker closer to the concerns of all voting groups. Sometimes, however, "there is a chance we don't hit the right people when we aim [a vote appeal] toward the ethnic group," he added, as was recently the case when the Republican campaign contacted a group of non-Jewish voters that it thought was Jewish.

"The use of information technology is the next best thing to the candidate being there. We can build up individual election records, voting histories, personal contacts, demographics, party affiliations and registrations that provide a multilayer record," Hofeller said.

The national committee uses security procedures such as passwords and system-use monitors that DEC specifically tailored for the committee.

All in all, the current Republican committee budget for computer services is $1.6 million, and approximately $2 million worth of equipment has been installed.

Unix applications seminar slated

LOS ANGELES — A three-day seminar on Unix applications will be given at the Century Plaza Hotel here Nov. 28-30 by Yates Ventures, Inc.

Designed for vendors and resellers of hardware and software, independent software vendors and systems integrators, "Unix Applications Forum: Directions '85" will address retail/distribution trends, Unix mainframe markets and applications, next-generation integrated office packages, application and program development tools, benchmarks, third-party software acquisition, graphics and vertical markets.

Thirty-five companies in the demonstration area will provide in-depth, hands-on product information to attendees.

The regular conference price is $995; $895 for subscribers to the Yates Ventures service. More information is available from Yates Ventures, Suite 201, 3350 W. Bayshore Road, Palo Alto, Calif. 94303.

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Local governments tap micros for electoral activities

By James Connolly
CW Staff

Voters walking into the polls Tuesday may find electronic voting machines replacing the noisy, awkward, mechanical ones they have used for decades.

But those microcomputer-based systems are only one way that micros are moving into city and county election departments.

"It seems that people are going toward microcomputers largely because they are available. We can put an all-purpose system out there, and many of the smaller counties can now afford a micro on which they can put general-purpose software, in addition to vote counting," reported Larry Gilbert, general manager of the election printing division for Sequoia Pacific Systems Corp. in Exeter, Calif.

Gilbert said his firm, which produces ballots, voter information pamphlets and minicomputer election software, is now moving into the micro software area.

"Voting never really fit in well with the county's general DP operation. The shift away from that operation has been happening for the last 10 years. It started with the minis, but they were still a little too expensive for a lot of counties," he said.

Those systems can be used year-round to maintain voting lists, track inventories of election equipment, design ballots, merge mailing lists, handle word processing and manage the election office budget.

In Alabama, Montgomery County Manager David T. Stockman is testing election software designed by the R. F. Shoup Corp. for the IBM Personal Computer on its Sperry Corp. Personal Computer.

The software is part of Shoup's electronic voting system. Montgomery County is the first user of the Shouptronic 1242 Election System.

The machines include a flat, membrane-like board on which voters touch a box adjacent to the names of the candidates they select. The vote is recorded in chip memory in a cigarette pack-size cartridge that plugs into an IBM Personal Computer-based vote-counting system at day's end.

PAC from page 1

lard, the IIA's vice-president for government relations, said, "We aren't really putting the muscle we should [into soliciting PAC contributions], but our members are encouraging us to get more into it. PACs are an effective means for focusing political contributions, and I'm a strong believer that it's the responsibility of citizens to finance these campaigns."

The Computer Dealers and Lessors Association (CDLA) of Washington, D.C., formed a PAC at its October annual meeting in New York, according to CDLA Executive Director James F. Benton. "If you're going to get someone's attention in Washington, you need a PAC," Benton said. CDLA intends to focus its efforts on backing legislators supportive of three-year depreciation for computer systems. "You must have an issue to establish a significant PAC, and we do," Benton said.

The Association of Data Processing Service Organizations, Inc.'s (Adapso) PAC, now in its third year, has contributed from $250 to $500 to each of 18 House and Senate candidates this year, according to Olga Grkavac, director of Adapso government relations. While Adapso's total PAC campaign contribution of $7,000 this year doubles that of two years ago, the organization still does not contribute to presidential candidates. "The type of financing required to get involved in the presidential campaign is just beyond our scope," she said.

CDLA also shies away from the presidential candidates. Benton said, "If you have a president who spends $8 million on a movie to announce himself at a national convention, what can a little PAC do? The fate of problems in our industry is settled in committees and on the Senate and House floor."

The American Electronics Association's (AEA) PAC, called Electro PAC, raised $45,000 in contributions in 1983, compared with $25,000 in 1981, according to Kenneth Hagerty, vice-president of government operations at the AEA. Electro PAC contributed to 83 House and Senate candidates, including 31 Democratic and 18 Republican incumbents in the House and nine Republicans and three Democrats in the Senate.

Commenting on the increased contributions, Hagerty said, "The electronics industry is playing an increasingly important role in the economy of this country. It's appropriate for us to play more of a role in the election process."

One of the industry's biggest PACs is the National Society for Professional Engineers (NSPE), which has 80,000 engineers as members. According to Kathy Prager, deputy director of legislative and government affairs, the NSPE PAC contributed approximately $300,000 to 129 candidates for the House and Senate this election. "There's a real enthusiasm for our PAC and a commitment [to] participating in the political process," Prager said. NSPE made the $5,000 maximum contribution to several candidates, including Rep. George Brown (D-Calif.), a member of the House Science and Technology Committee, and Rep. Don Ritter (R-Pa.), vice-chairman of the Republican Task Force on High-Tech Initiatives, Prager said.

Compared with average corporate PACs, NSPE is big time. The average corporate PAC donated $5,630 in contributions in 1983, according to a survey by the Public Affairs Council of Washington released in September. The average candidate contribution from corporate PACs in that year was $513, the survey showed.

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Users question if PE will drop OS/32 in favor of Unix

By Charles Babcock
CW New York Bureau

CHERRY HILL, N.J. — Richard L. Beaderstadt, manager of computer services at Year Book Medical Publishers in Chicago, is facing a dilemma.

He likes Perkin-Elmer Corp. and thinks that its hardware "has always been superior" to that of other vendors, but he is having second thoughts about doing a full-scale upgrade to bring his department in line with his fast-growing company.

Beaderstadt in particular wants to adopt the latest release of PE's standard OS/32 operating system, but he is watching with concern PE's enthusiasm for its new AT&T Unix-based operating systems.

'So much emphasis on Unix'

PE was one of the first companies to specialize in 32-bit minicomputers; their machines are used in flight simulators, laboratories and other places where real-time data collection is important. Beaderstadt represents a more traditional commercial user, however. During the recent annual meeting of PE users here he said, "It's frightening to the business community [that] there's so much emphasis on Unix."

Will PE really support two operating systems, or will it be tempted to drop OS/32 in favor of Unix a few years down the road? That is the question Beaderstadt asked.

Beaderstadt already has an updated version of OS/32, and that is part of the reason he is concerned. The OS/32 7.2 revision will not run his library of 400 programs written over the last six years in the PE Isam programming language.

> *'Every time we want to upgrade with Perkin-Elmer, we have to explain why we are not going to IBM.'*
> — Richard L. Beaderstadt, Year Book Medical Publishers

"They say they will support both operating systems, but we have reason to doubt this. The reason is our experience with Isam," Beaderstadt said.

He acknowledged that Year Book Medical Publishing is one of the last PE installations still using Isam programs and said the time has come to make a conversion.

His company publishes compilations of articles and scientific studies for the medical field. Because it has a data base that includes the names and addresses of each member of the American and Canadian Medical Societies, Year Book Medical Publishing is asked to market other companies' products. Anatomical Charts Co. of Chicago, for example, has Year Book distribute its charts and modeling kits, and because of Year Book's investment in the data base, it can target specific medical specialties within the societies.

Growth at Year Book has been rapid, and because of it, his superiors appreciate the potential of the MIS department, Beaderstadt said. If anything, it has led to questions about whether Year Book should drop PE and become an IBM shop. "Everytime we want to upgrade with PE, we have to explain why we are not going to IBM," he noted.

Another reminder came when Year Book's vice-president for finance asked why he could not run his McCormack & Dodge Corp. accounting software on the company's PE 832 and 3254 central processors. The software is designed for IBM machines.

Year Book has begun to find its files restricted under the existing OS/32 system. Beaderstadt said Perkin-Elmer's Reliance relational data base management system would do a better job with more files. To use it, however, he would have to increase his number of disk drives from eight to 14 and rewrite his Isam programs.

Year Book would also like to move into text processing — it currently relies on commercial printers — but when it tried to send text from its Wang Laboratories, Inc. word processor to the disk drive, the drive would not receive it. Beaderstadt put IBM 3270 terminal emulators on both the word processor and the disk drive controller, and the disk accepted the text. As a result, the IBM advocates at Year Book gained another point.

IBM strengths

Beaderstadt sees the pluses of moving to IBM as having access to a greater variety of software and 24-hours-a-day, seven-days-a-week service.

Also, he would no longer have to train new programmers in the peculiarities of Isam and the PE system.

But PE's strength is in "very fast processors that are very cost-efficient. IBMs cost four times as much," he said, and PE software is improving.

Beaderstadt anticipates Year Book will go to the upgraded OS/32 and the Reliance data base management system next year, but no formal decision has been made. "My concern is how to get [PE] to support the products it already has."

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Improving high-tech exports, competitiveness topic of meet

BOSTON — A seminar on enhancing the competitive position and export potential of U.S. high-technology products will be held here Nov. 15 at the Boston Marriott at Copley Place.

The seminar, titled "The Competitive Collision in High-Technology Industries," is cosponsored by Price Waterhouse & Co., the U.S. Department of Commerce's U.S. and Foreign Commercial Service and the Battelle Memorial Institute.

It will offer executives, investors and exporters the opportunity to learn how emerging trends and technologies will affect their companies' and clients' future profitability and competitiveness, according to the sponsors.

A special focus of the seminar will be on five industries that the sponsors maintain will have increasing export potential — computers and peripherals, electronic components, industrial process controls, medical equipment and telecommunications.

Registration for the seminar is $350. Additional information and reservations may be obtained from Price Waterhouse, One Federal St., Boston, Mass. 02110.

Forum to focus on departmental computing systems, applications

CAMBRIDGE, Mass. — The 1984 Hammer Information Systems Conference, entitled "Departmental Systems: The Convergence of Office Automation, Personal Computing and Distributed Processing," is scheduled for Nov. 27-29 at the Hyatt Regency Hotel here.

The forum, sponsored by Hammer and Co., was planned to discuss the nature of departmental applications, departmental hardware and software requirements, personal computers in a departmental system and how well existing products meet the needs of departmental computing.

The scheduled forum leader is Dr. Michael Hammer, president of Hammer and Co. Among the other featured speakers are William W. K. Rich, vice-president of systems development at IBM's System Products Division; Frank S. Vigilante, president of AT&T's Information Systems product management and development group; Frank L. Chisholm, executive vice-president of Cullinet Software, Inc.; and Gerard D. Cohen, president of Information Builders, Inc.

The cost of the forum is $1,150.

Hammer and Co. is located at 5 Cambridge Center, Cambridge, Mass. 02142.

IBM, AT&T clash to be waged on PBX battlefield

Rolm acquisition seen critical to IBM strategy as firms gear up for long-awaited fray

By James Connolly
CW Staff

NEW YORK — The battle that has been expected for 15 years — IBM vs. AT&T — finally is here and will be fought hardest in the private branch exchange (PBX) or advanced controller arena, according to a Michigan-based consultant who spoke here recently.

The controller that provides an organization's internal voice and data communications links and function and which serves as the gateway to the public telephone network, will be the "central battleground" for AT&T and IBM, Dixon R. Doll said. Doll is president of the DMW Group, Inc., a telecommunications consulting and software firm that sponsored a recent conference here.

"The PBX will be at the center of all this, and that is why IBM's purchase of [Rolm Corp.] is so important," Doll noted. He also said that the probable joining of IBM, Rolm and Satellite Business Systems (SBS) on a single marketing team could provide the competition that would convince the Federal Communications Commission to deregulate AT&T.

Battle will develop

That PBX battle will develop as the 1990s approach and as new PBX technologies are needed to replace today's systems, Doll predicted.

Doll said that up until recently, the IBM-AT&T battles were illusory or nonexistent and that there are some territories where the two corporations will not infringe on each other. Barring a joint operating agreement with a Japanese plug-compatible mainframe manufacturer, AT&T will not raid IBM's large processor market, he said.

He added that IBM will not try to break the AT&T and Northern Telecom, Inc. "stranglehold" on the telephone central office market.

AT&T's strategy will be to "surround the glass house" — the computer room that IBM now dominates — with PBXs, wiring, applications and personal computers and to follow IBM's management approach, Doll predicted. He noted that AT&T is reorganizing its operations along the same lines that IBM did in recent years, with market-oriented divisions developing their own products.

Market blitz

Both companies will "blitz all major market opportunities," including communications, distributed data processing and office systems.

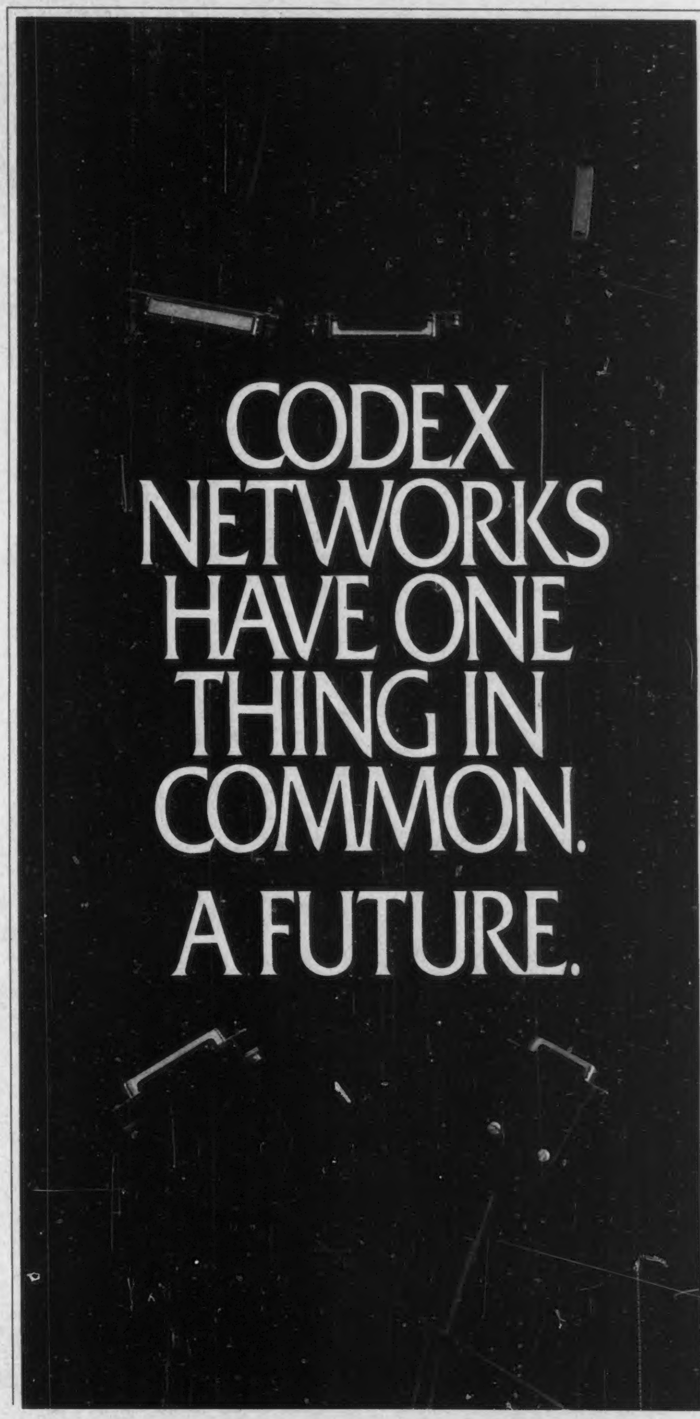
On the one hand, IBM holds an edge because of the age of AT&T's 3B computer technology, and, on the other, IBM is at a disadvantage in having to provide software support for so many incompatible systems, Doll said.

He also observed that both companies are "limping along" with their value-added transmission services, the IBM Information Network and the AT&T Net 1000, although IBM has less investment at risk. He said IBM is likely to supplement SBS with a T1-scale terrestrial service.

Speaking with Doll, Ivan Wolff, senior vice-president of Rothschild Ventures, Inc., noted that AT&T's strategy includes capturing the desktop.

He said AT&T already has a foothold there in the form of the telephone and will seek to enlarge upon that with enhanced PBXs that handle data and voice, with private networks, new wiring and computers to do applications.

Those PBXs, Wolff said, are likely to be built along the lines of the AT&T Dimension System 75, a modular integrated voice and data system that allows flexible configuration.



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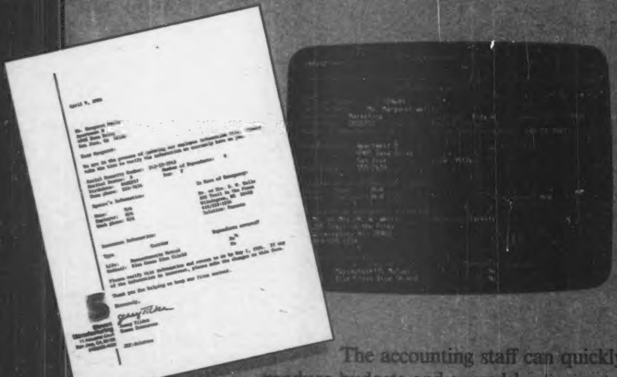

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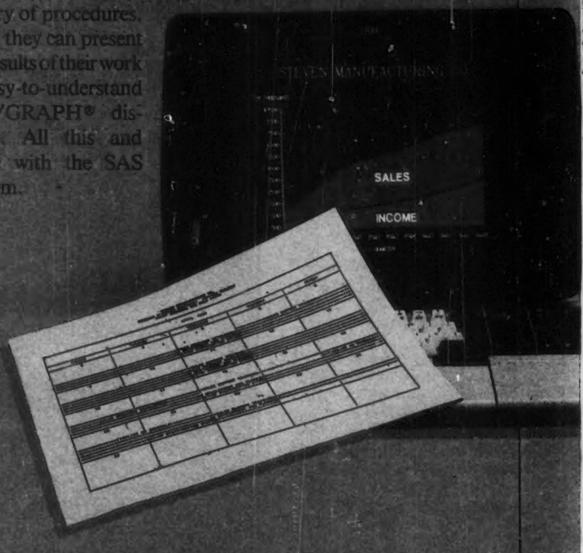

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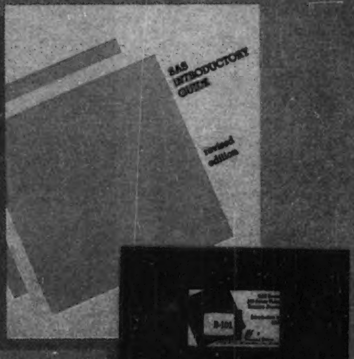

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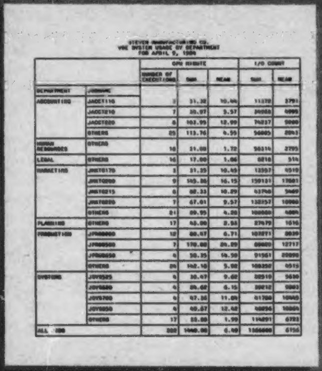

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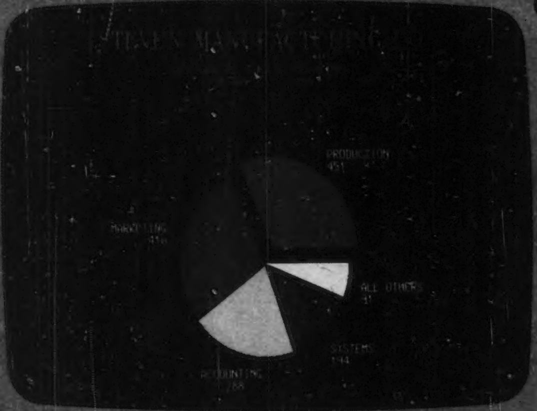

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PRODUCT SPOTLIGHT

Protocol converters easing communications

Whether linking or translating, converters can offer cost-effective device integration

By Phil Hirsch
CW Washington Bureau

Although the pundits predict that on-line terminals will soon be used by nearly every office worker, enabling corporate chiefs as well as Indians to become much more productive, this new world creates a number of problems for system managers.

The personal computers and computer-based workstations now being installed almost invariably do not talk to each other nor do they communicate directly with the terminals and computers an organization has already installed. And as terminals are added, traffic grows, which may mean not only more circuits, but a completely different transmission scheme — for example, digital instead of analog, packet-switched instead of circuit-switched.

These are basically technical problems. Possibly the biggest nontechnical one is how to integrate the new devices into the organization's existing communications environment at optimum cost.

Protocol converters provide at least a partial answer to all of these questions. Their primary function is to support communication among terminals and computers that use different character codes — for instance, Ebcdic and Ascii — and different communications protocols — such as TTY (asynchronous) and binary synchronous communications (BSC) or Synchronous Data Link Control-(synchronous). Essentially, the converter changes the sending device's code for a given character or communications protocol function into a second code that represents the same letter or function to the receiving device.

A common application of protocol converters is to link personal computers and other asynchronous Ascii terminals to IBM synchronous networks through IBM 3274 controllers, explained John Ambler, vice-president of Contel Information Systems, Inc., headquartered in Great Neck, N.Y. This arrangement, Ambler added, allows an IBM synchronous end-user terminal — typically a 3278 — to be superseded by an asynchronous device costing far less. It also allows a user, through a single terminal, to access computers and terminals attached to either asynchronous or synchronous networks, thus eliminating "terminal clutter," Ambler said.

Regarding the dollar savings, he estimated that an IBM 3278 costs from $2,500 to $3,000, while a replacement asynchronous terminal may cost well below $1,000.

One distinguishing feature of individual protocol converters is the amount of protocol conversion they do. Some convert only the codes that establish, maintain and terminate communication between sending and receiving devices. These codes, among other functions, ask a receiving device if it is ready to receive a message, tell a sending terminal to begin transmitting, report errors to the sending terminal, identify retransmitted message blocks and, using sequence numbers, detect message blocks that get lost in transit.

Other protocol converters translate the above codes as well as those controlling the presentation of text and graphics on a terminal, CRT screen or hard-copy printout. These codes designate the end of a line, cause specific characters to blink, show up extra bright, high or wide and designate tab stops for chart columns.

Much of the semantic confusion surrounding protocol conversion comes from the fact that some suppliers call both types of translation protocol conversion, while others call it emulation; still others say translation of message presentation control codes is emulation while protocol conversion deals with changes in code and transmission protocol — that is, Ascii to Ebcdic, TTY to BSC. In this article, protocol conversion is defined to include emulation.

A SAMPLING OF PROTOCOL CONVERTERS

	Agile Corp. 2290 Ringwood Ave. Concord, Calif. 94520	**Air-Land Systems Corp.** 2710 Prosperity Ave. Fairfax, Va. 22031	**Dynatech Technology, Inc.** 6464-G General Greene Way Alexandria, Va. 22312	**Gandalf Data, Inc.** 1019 Noel Ave. Wheeling, Ill. 60090
Model	6287	PCU 200	Protopad X.25 Packet Assembler/Disassembler	PIN 3270E-8
Function	Connects IBM 3274, 3276 cluster controllers to non-IBM printer, plotter or other receive-only device	Provides configurable asynchronous-synchronous conversion, terminal-computer or computer-computer	Translates between synchronous, asynchronous protocols and X.25	Connects non-IBM asynchronous CRTs to IBM 3274 controller
No. of terminal-side ports/devices supported	1 port	1 port	Up to 32 synchronous, 8 asynchronous devices	Up to 24 terminal ports
No., type of host/controller/ network lines supported	1	1	1 (see "Comments")	Up to 2 SNA/SDLC
Transmission rate, mode to/from terminals	Up to 19.2K bit/sec; simplex	50 to 19.8K bit/sec; asynchronous-synchronous half/full duplex	Up to 9,600 bit/sec; synchronous or asynchronous	Up to 9.6K bit/sec; asynchronous full duplex
Host/controller/network line transmission rate, mode	2.35M bit/sec; IBM 3270 coaxial	50 to 19.8K bit/sec; half/full duplex	1,200-9,600 bit/sec; full duplex	Up to 19.2K bit/sec; synchronous full duplex
PROTOCOLS SUPPORTED				
Host/controller/ network side	IBM 3270 coaxial	TTY, other asynchronous protocols used by Ascii terminals; also, synchronous protocols listed under "Comments"	X.25	SDLC
Terminal side	Asynchronous Ascii	Same as host/controller/ network side	BSC, TTY	Any standard protocol used by Ascii asynchronous terminals
Specific device(s) emulated	IBM 3287	Varies	IBM 3270	IBM 3274
First installation	First shipments September 1984	1979	July 1984	1982
No. installed to date	N/A	2,000	50	N/A
Price	$1,595	$1,650	$2,500	$10,950-$16,950
Comments	Provides diagnostics and two methods of transparently transmitting special escape characters and character fonts to end terminal from host; can be connected locally to end terminal via cable; also accommodates longer distance connection via dial-up circuit.	A stand-alone unit, typically serving a single end terminal. Software for IBM bisynchronous and Sperry Corp., Honeywell, Inc., Burroughs Corp. and NCR synchronous protocols available. Interface support includes RS-232C.	Provides direct connection to PAD via dial-up circuit. Maximum input speed per terminal port is 9.6K bit/sec. RS-232C host channel interface standard; V.24, X.21b optional.	Over 100 different terminal emulation programs reportedly available on cassette for direct entry.

CW CHART

More than one way to protocol conversion

By Phil Hirsch
CW Washington Bureau

One way of obtaining protocol conversion is to use a public packet-switched network to connect an organization's remote terminals with its host computer or computers. Among the leading vendors are GTE Telenet Communications Corp. and Tymnet, Inc.

In such cases, the vendor provides protocol conversion as part of its service, and the user does not have to make any major changes to either the host or the remote terminals. A 1983 survey by Datapro Research Corp., a Delran, N.J., consulting firm, suggests that about 10% of those who need protocol conversion use GTE Telenet, Tymnet and other vendors of value-added network services.

Most other users who need protocol conversion employ "software loaded into an existing system such as a general-purpose computer, front-end processor, terminal controller or private branch exchange system," Datapro reported.

A common installation site for a protocol converter is either within a cluster controller or between the cluster controller and the end user's terminal. But in the case of personal computers, the conversion package is often installed within the terminal. Typically, it consists of a diskette and a circuit board fitted into one of the personal computer's expansion slots. One such micro-to-mainframe interface, according to Datapro, is Irma, a product of Digital Communications Associates, Inc. in Norcross, Ga.

Before deciding to install protocol converters, a user should consider the converters' limitations, advised Charles R. Robbins, director of communication services at the Framingham, Mass.-based International Data Corp. Frequently, he said, response time suffers when protocol converters are used because the devices link low-speed asynchronous terminals to higher speed synchronous nets, and data has to be buffered before it can be handed off in either direction. There is also a danger that the buffers will overflow, and data will be lost.

> *The economics of acquiring a protocol converter built into a controller, terminal or similar device, as opposed to getting a standalone converter, may be more apparent than real.*

Training may be a problem. Because asynchronous terminal keyboards, as supplied by their manufacturers, support a smaller set of commands than synchronous terminals, new key combinations often have to be added and learned so that the asynchronous terminal can communicate with a synchronous device. On the other hand, Robbins added, if this communication does not occur very often, it may be sufficient to retrain only a few operators at a particular location.

Assuming these limitations are not significant, the user's next big decision is whether to subscribe to an outside protocol conversion service or install his own equipment. Because all suppliers of such services operate packet-switched networks, the choice involves — besides economics — a comparison of switching technologies.

Transaction time tends to be slower when a packet net is used in place of a leased private line, because of the buffering that generally occurs at each network node traversed by the packet, according to Samir L. Stavro, director of X.25 marketing and development at Micom Systems, Inc. in Chatsworth, Calif. On top of the delay at the protocol converter, this can be significant.

According to Robbins, the first factors to consider in deciding whether to use a packet net are:

- The access costs — how far away from each location served is the nearest packet net node.

See **NETWORK** page 26

A SAMPLING OF PROTOCOL CONVERTERS

	Icot Corp. 830 Maude Ave. Mountain View, Calif. 94043	**Local Data, Inc.** Suite 706, 2701 Toledo St. Torrance, Calif. 90503	**Micom Systems, Inc.** 20151 Nordhoff St. Chatsworth, Calif. 91311	**Protocol Computers, Inc.** 6150 Canoga Ave. Woodland Hills, Calif. 91367
Model	362	Versalynx 3278	Micro7400	1076X
Function	Links asynchronous Ascii to IBM SNA/SDLC devices	Links IBM 3278, 3178 terminals to asynchronous Ascii devices and to 3274, 3276 cluster controllers	Connects asynchronous Ascii to IBM BSC or SNA/SDLC devices	Connects asynchronous Ascii devices to SNA/SDLC, Ascii hosts via X.25 network
No. of terminal-side ports/devices supported	Up to 16 asynchronous ports	1 coaxial port, 2 RS-232C ports	12 asynchronous devices	Up to 7 Ascii devices plus up to 7 auxiliary printers
No., type of host/controller/ network lines supported	Up to 2 SDLC	2	2 BSC or 2 SNA/SDLC	7 virtual circuits max. to Ascii hosts, 1 virtual circuit to SNA host
Transmission rate, mode to/from terminals	Up to 19.2K bit/sec; asynchronous full duplex	110-9,600 bit/sec; full duplex	9.6K bit/sec max.; full duplex	Up to 9,600 bit/sec; asynchronous full duplex
Host/controller/network line transmission rate, mode	2,400-19.2K bit/sec; synchronous full duplex	Up to 9,600 bit/sec; full duplex	19.2K bit/sec; half duplex	Up to 9,600 bit/sec; asynchronous full duplex
PROTOCOLS SUPPORTED **Host/controller/ network side**	SNA/SDLC	Any standard asynchronous protocol	BSC, SNA/SDLC	X.25
Terminal side	Any common asynchronous protocol used by Ascii terminals	IBM 3278 coaxial	TTY	TTY, any asynchronous protocol commonly used by Ascii terminals
Specific device(s) emulated	IBM 3274 SDLC cluster controller	IBM 3101; Digital Equipment Corp. VT100, VT102; Hewlett-Packard Co. 2600 series; Lear-Siegler, Inc. ADM 3A	IBM 3271, 3274, 3276	IBM 3274
First installation	November 1983	July 1984	February 1984	1983
No. installed to date	About 200	N/A	800	N/A
Price	$9,800	$695-$795	$1,650-$4,750	$3,350-$5,800
Comments	Asymmetric transmission offered on terminal side; also, customer-tailorable terminal emulation capability plus 25 preconfigured profiles.	Includes separately addressable port for auxiliary printer.	IBM Personal Computer support provided; unit can also support simultaneous connection to multiple hosts: either 2 IBM BSC or 2 SNA/SDLC hosts, or one of these plus up to 8 asynchronous host processors.	Packet-length switch-selectable within 128- to 256-packet range; facility and user fields optional from Ascii device entry; frame window is 7 packets; SNA equivalent to IBM 3274, 3276 PU Type 2 with up to 8 logical units.

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- Network Management

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NETWORK

from page 23

- The need for connection to multiple networks — if more than one is involved, the network solution might be cheaper than installing separate converters.
- The number of end terminals at each location. As he put it, if there is only one or two terminals, "buying a converter would probably be much more expensive than connecting to Telenet, Tymnet or one of the other packet net carriers."

If the network solution is not feasible, the user must begin looking at the confusing array of protocol conversion products. One good place to start is with a service that compares individual offerings. Datapro provides such listings. (The chart accompanying this product spotlight is based partly on data from a Datapro survey published in June 1984.)

One reason it is difficult to comparison-shop among the protocol converter vendors' brochures is that they often do not specify precisely what devices can be connected to their products or what is meant by connection.

"Many of the independent 3270-compatible vendors offer terminals, printers and Personal Computers that provide the same or greater functionality than equivalent IBM devices," but these "function-compatible products . . . cannot connect to an IBM cluster controller," explained consultant Alan Weissberg, an adjunct professor at the University of Santa Clara, Calif. "As a result, IBM and non-IBM devices cannot be intermixed within the same cluster controller." Plug-compatible vendors, however, do offer controllers and terminal devices that can be connected to already-installed IBM equipment, he added.

Another important consideration in evaluating protocol converters, Robbins said, is to look at the associated features. Specifically, he said, users should check the diagnostics, polling, data compression and autoanswer capabilities offered by each supplier. The user should also determine what multiplexing/concentrating features are offered, and what impact they will have on his existing operation.

Robbins suggested that the economics of acquiring a protocol converter built into a controller, terminal or similar device, as opposed to getting a stand-alone converter, may be more apparent than real.

Because an integrated device provides additional functions and probably services multiple terminals, it usually provides protocol conversion at a lower first cost than the stand-alone device. But requirements have a tendency to change, Robbins pointed out, and most protocol converters — whether integrated or not — are not modifiable. The total first cost of a stand-alone converter is less than the total first cost of a terminal, controller or similar device that provides protocol conversion plus additional functions. Thus the user — who, because of changing requirements, has to replace his first protocol converter before it is fully amortized — is better off with the stand-alone device.

Cips show to be held in Toronto

TORONTO — Author and scientist David Suzuki will be the keynote speaker at the 15th Annual Canadian Computer Show and Conference, sponsored by the Canadian Information Processing Society (Cips), Nov. 19-22 at the International Centre here.

Suzuki is a professor of zoology at the University of British Columbia.

Other key speakers include author Edward de Bono; AT&T Canada President Roger Moore; and Denzil Doyle, president of Doyletech Corp.

Fees are $125 per day for Cips members who register before Nov. 5 and $145 after that date; $145 for nonmembers before Nov. 5 and $175 after that date.

Further information is available from the Canadian Computer Show and Conference, 243 College St., Toronto, Ont. M5T 2Y1.

Nov. 12 Ada meet set

WALTHAM, Mass. — Jean Ichbiah, the principal designer of the Ada computer language and founder of Alsys, Inc., will conduct an Ada instructional seminar for engineers and programmers, Nov. 12-14 at the Hilton at Colonial in Wakefield, Mass.

Speaking with Ichbiah will be Benjamin Brosgol, vice-president and technical director of Alsys. Assisting will be Rene Beretz, project director of Alsys, S.A., in Versailles, France. The three-day conference is $800 per person.

Alsys is at 400-1 Totten Pond Road, Waltham, Mass., 02154.

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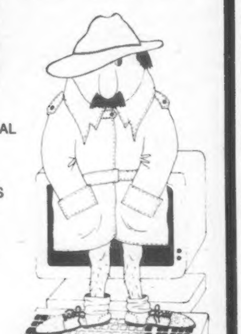

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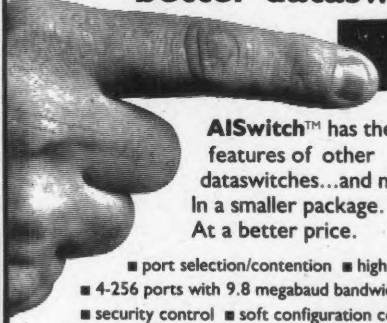

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Enhancements abound on converters' horizon

By Phil Hirsch
CW Washington Bureau

One of the things that makes selecting a protocol difficult — in addition to the bewildering array of product offerings and their often incomplete specifications — is the march of technology. Investing in today's technology may not make sense if a better product is likely to be offered tomorrow.

It is quite possible, according to Charles Robbins of Framingham, Mass.-based International Data Corp., a market research firm, that within the next few years, a controller able to perform multiple protocol conversions simultaneously will become available. The software may be downloaded from a computer operated by the user or the controller manufacturer. This arrangement, Robbins explained, would allow the user not only to specify the protocols to convert, but also choose different ones if his needs change.

Local Data, Inc. is apparently planning a limited implementation of this idea next month. According to spokeswoman Barbara Rosenzweig, the company plans to unveil a deluxe version of its Versalynx 3278 converter, which will reportedly enable the user to emulate "just about any" command utilized by an asynchronous Ascii terminal. Using an IBM 3278 or 3178 terminal, the user will build the emulator by conversing with firmware resident in the Versalynx, the spokeswoman said. By responding to questions that appear on his screen, the user will define the parameters of each command. After the emulation is finished, it reportedly may be downloaded to any other Versalynx in the user's network.

Icot Corp. said it has been offering a similar capability since December 1980 with its 35X series converters and since November 1983 with its 36X series. Icot's customer-configured terminal emulation profiles, however, are not transferable.

Converters on the way

Consultant Dixon Doll agreed that converters able to perform multiple translations simultaneously are on the way, but, he said, the first ones will come from manufacturers of stand-alone devices. These manufacturers, he explained, face increasing competition from vendors building protocol converters into terminals, controllers, private branch exchanges (PBX), mainframes and related devices, and who claim that this approach is more cost-effective than a separate box.

Datapro Research Corp., in its June '84 report on protocol conversion, said both Rolm Corp. and Intecom, Inc. now provide protocol conversion in their PBXs (the CBX and IBX models, respectively), and that this capability is also being offered by manufacturers of front-end processors, host-independent network processors, minicomputers, data switches and word processors.

A key question at the moment is whether IBM will enlarge the protocol conversion capabilities of its 3274 controller. Consultant Alan J. Weissberger believes a 3274 "supercontroller" may emerge "within the next year." On one side, it would attach to Systems Network Architecture (SNA) plus packetized, long-distance networks. On the other, the supercontroller would provide interfaces to multiple synchronous, asynchronous, gas plasma and personal computer terminals. The new controller would also provide links to multiple SNA/Synchronous Data Link Control (SDLC) hosts, do some local processing and switch traffic among its attached terminals and personal computers, as well as among the terminals and remote devices.

IBM recently took what may be the first steps down this road when it announced the Model 7171 Ascii device attachment control unit and the Model 3710 network controller.

The 7171 enables 16 to 64 asynchronous terminals — including all the popular personal computers, according to IBM Communications Products Division Staff Engineer Ed Suffern — to communicate with 3270 applications within 370-type architecture processors, such as the 3081, 3033, 4341 or 4361. The 3710 allows two to 32 devices — Ascii, bisynchronous and/or SNA units — to communicate with one or more SNA/SDLC host computers via 3705/3725 front-end processors.

Another key trend, according to Doll, is further development of "converters that can translate among higher level protocols." He is referring to a widely cited diagram known officially as the Open Systems Interconnection (OSI) model, representing a terminal network interface in seven levels, each having specified functions. Today's protocol converters typically implement the lowest three or four levels of the OSI model; if they include emulators, Level 6 is also involved. Doll said, in effect, that there will be further development of Level 6 converters, designed for particular kinds of terminals.

One example is a package recently

See **CONVERT** page 29

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Protocol converters provide cost-cutting link

By Phil Hirsch
CW Washington Bureau

The Buick Motors Division of General Motors Corp. is saving a bundle by using protocol converters to connect 50 Ascii terminals on one of its factory floors to three computer networks.

The installation is located at Buick's Plant 81 in Flint, Mich. The Digital Equipment Corp. VT-series asynchronous terminals are used by machine operators, plant engineers and management personnel to communicate with 10 IBM synchronous mainframes and five VAX asynchronous computers, explained Martin Jarrard, plant systems manager. Installed about six months ago, the system requires two asynchronous-to-synchronous protocol converters: Perle GSD, supplied by Perle Systems Ltd. of Toronto; and a Micro7400, supplied by Micom Systems, Inc., of Chatsworth, Calif.

Without the converters, Jarrard explained, each of the 50 locations would require a second, synchronous terminal. The price of each "would be anywhere from $35 to $180 per month," he added. "We would also need four IBM 3274 cluster controllers. By using the protocol converters, our VT-series dumb terminals substitute for the synchronous devices and eliminate the need for 3274s." The cost of the two protocol converters and associated port selectors reduces this savings only slightly, Jarrard said.

At the New Mexico Public Service Co. in Albuquerque, N.M., protocol converters are supporting a telecommuting service. Employees who are on the road or at home access the company's two IBM mainframes — Systems Network Architecture/Synchronous Data Link Control 3083 and a bisynchronous 4381 — through personal computers.

Electronic messaging is one application of the system, explained George Painter, communications specialist. "Some of our executives spend a lot of time on the road, and it's a big help if they can pick up messages outside of regular business hours."

Another application involves software troubleshooting. "Some of our programmers live 25 miles away, and under the best traffic conditions, it takes them an hour to get here," Painter said. "Now, all they have to do is dial in from home. The protocol converters make their [personal computers] look like IBM synchronous terminals, and so they have full use of our system's diagnostic software," he said. Almost invariably, he added, the trouble is repaired in a small fraction of the time that would be required otherwise.

CONVERT from page 28

introduced by MCI Communications Corp. Called Document Plus, it allows the text processing codes that control such functions as underlining, subscripting and boldfacing to be transmitted among seven different brands of word processing equipment, reportedly comprising 85% to 90% of the market.

AT&T seems to be moving in this same general direction. Although its Information Systems Network now connects physically with virtually all of the popular personal computers, this is a only a Level 1 connection on the OSI model. The company plans to add error control, multiplexing and other higher level functions in coming months [CW, Sept. 24].

Protocol conversion services and devices are likely to undergo some major changes in the next few years. One big question pending is whether the Federal Communications Commission will let the divested Bell operating companies offer end-to-end protocol conversion directly.

The commission's decision will do much more than determine whether a new group of suppliers enters the market. If the divested Bell operating companies are allowed to offer end-to-end protocol conversion directly, the universe of packet net users is bound to expand dramatically, which should cause today's prices for packetized transmission to tumble.

Under the FCC's Second Computer Inquiry decision — often referred to as Computer Decision II — the divested Bell operating companies can offer end-to-end protocol conversion only through separate subsidiaries. The carriers object to this arrangement, arguing that it would require them to establish two sales forces, create administrative duplication, generate unnecessary costs, increase the service price and wrap the customer in a fog of confusion.

Under the Computer II decision, as applied to the divested Bell operating companies by the FCC last year (Dockets 83-115 and 80-756), the separate subsidiary requirement can be waived if the carriers convince the commission that such action is justified.

However, independent suppliers of packet net services are fighting hard to keep the divested Bell operating companies off their turf.

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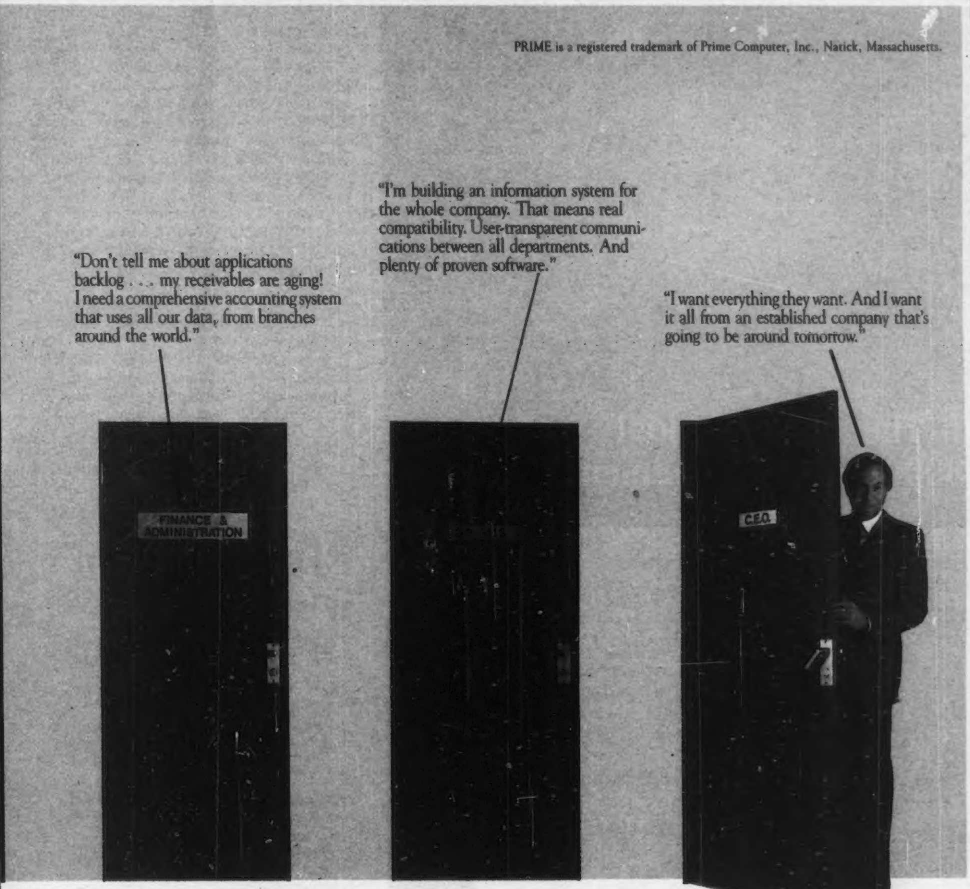

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Underequipped, overtaxed SSA caught in DP logjam

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — The Social Security Administration's (SSA) data processing office has experienced substantial delays in recomputing Social Security benefits, a problem caused by undersized computers and competition from other data processing tasks, including numerous programming changes required by Congress, according to Congress' General Accounting Office (GAO).

One consequence of the delays, a recent GAO report said, is that millions of Social Security recipients were temporarily underpaid by $1.98 billion because it took SSA as long as 42 months to recompute benefits based on 1979 and 1980 earnings data.

The report's conclusions were based largely on interviews with DP personnel at the SSA. Agency officials generally agreed with the GAO report. They stressed that improvements are being made as part of the SSA hardware and software modernization program begun two years ago.

At the request of Rep. George Miller (D-Calif.) and other members of Congress, the GAO report focused on problems with the Automatic Earnings Reappraisal Operation (Aero), which annually recomputes benefits based on new earnings data so that retroactive adjustments can be made. "For the cases GAO reviewed, an average of 34 months elapsed [before] the underpayments were rectified," the report said.

"Difficulties in implementing a newly legislated annual wage reporting system for 1978 earnings, competition from other programs and the need to implement several new legislative mandates have caused the delays," GAO concluded.

Specifically, GAO reported:

■ Congress' decision to change from quarterly to annual wage reports forced SSA to "redesign all earnings processing systems and rewrite the computer programs [completely]," contributing to Aero delays. In addition to the added work load, investigators found that SSA had no system for handling the magnetic tapes of wage data that employers provided, and many tapes were improperly formatted or coded so "programmers spent up to nine months on some tapes trying to resolve problems."

■ Delays in performing Aero were also attributed to competition for computer programmers and analysts, because SSA was implementing several major pieces of legislation during the period from 1979 to 1981 that required program changes.

■ Aero also competes for computer time with other ongoing operations, such as enforcement, benefit rate increases and annual reports. To cut the Aero backlog, SSA decided to combine the 1979 and 1980 earnings reports into one Aero operation, but this required extensive software changes.

The key to reducing the Aero delays is the SSA Systems Modernization Program, GAO said, which will include the redesign of software and an upgrade of hardware capacity to handle the work load. "Expected benefits of the capacity upgrade include increased operator productivity, a reduction in the number of overtime production shifts required, increased processing capacity and elimination of processing backlogs," GAO said.

SSA expects the modernization plan to achieve its primary objectives by February 1988.

In the meantime, SSA officials indicated they are making minor improvements in the Aero system and are expecting Aero operations for 1981 and 1982 data to be completed in 31 to 32 months and Aero operations for 1983 data to be completed in 22 to 23 months.

EDS chairman wins annual DPMA award

PARK RIDGE, Ill. — H. Ross Perot, chairman of Electronic Data Systems Corp. (EDS) of Dallas has been selected as the 1984 recipient of the Distinguished Information Science Award, sponsored by the Data Processing Management Association (DPMA).

Perot founded EDS in 1962 with $1,000, and the company grew to $652 million in revenue by 1983. EDS did pioneer work in facilities management, establishment of large regional data processing centers and specialization of systems engineering by industry.

The son of a Texarkana, Texas, horse trader and cotton farmer, Perot was a Midshipman at the U.S. Naval Academy in Annapolis, Md., graduating with a bachelor of science degree in 1953.

He is scheduled to receive his award Nov. 7 at the DPMA's 33rd Annual International Computer Conference and Business Exposition at the Disneyland Hotel Convention Center in Anaheim, Calif.

More information is available from DPMA, located at 505 Busse Highway, Park Ridge, Ill. 60068.

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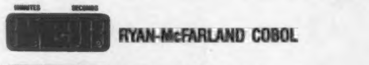

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Message service targets trade show mart

CHICAGO — A Chicago firm is targeting computer conferences and other trade shows with a computerized message system that allows attendees to borrow pocket pagers and to call up messages and general information at terminals located on the show floor.

Convention Communications, Inc. claims to be one of about three start-up companies offering the trade show industry full message and information services, which other vendors have previously provided separately.

Anthony J. Stankus, the company's vice-president, said recently that the 200 pocket pagers that his company loans to show attendees provide the missing link in the information network.

He said the network includes paging, exhibitor location service, representative location service, general electronic messaging for all attendees and videotex.

"What we want to do is take the trade industry into the 21st century. When you get right down to it, the most modern conveniences introduced to the trade show industry in the past 100 years [were] electric lights and telephones," Stankus said.

The company's operation is centered on a 32-user Molecular Computer, Inc. Supermicro 32X, and the paging signal is provided by Mobile Communications Corp. of America.

Convention Communications contracts with exhibitors or show organizers to provide communications at a cost ranging from 10 cents to 17 cents per square foot of show space and to service shows that recently have included the Consumer Electronics Show, the Housewares Show and the Hardware Show.

Conference attendees then can reserve pagers and use the 10 terminals, consisting of Radio Corp. of America keyboards and Apple Computer, Inc. monitors in kiosk-type structures.

Callers can reach attendees by dialing a toll-free number and leaving their message with a Convention Communications operator, who enters the message into the computer. Using 9,600 bit/sec dedicated lines, the computer instructs the Mobile Communications paging computer to page the message recipient. The recipient then calls the same toll-free number to reach an operator who retrieves the message or uses the menu-driven terminals to read it.

Also at the terminals, guests without pagers can call up messages and view videotex information, such as meetings and schedule changes, which can be updated. Stankus said the exhibitor locator service allows attendees to choose product categories or vendor names from on-screen menus to learn where the various exhibitor booths are situated. The representative locator service helps exhibitors learn which regional sales representatives are attending the show and how to reach them.

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We will look at how application tools are being used and where they should not be used. We will focus on what you need to know about ready-made software and how to avoid the "package trap."

Contributions should take one of two forms: a tutorial article, discussing an issue or trend; or an application story, outlining a particular user firm's experience with an application package.

Articles must be typed, double-spaced and range in length from four to six pages. Charts, graphs and photos are welcome.

Authors should include a brief biography and a telephone number at which they can be reached. The deadline for submissions to the January Special Report is Nov. 19.

If you have a story you would like to tell, or if you have any questions to ask, send them to Janet Fiderio, Special Reports Editor, *Computerworld*, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Micro forum set for Nov. 13

SILVER SPRING, Md. — The Fourth Systems Executive Forum on Managing Microcomputer Systems will be held Nov. 13-15 at the Hyatt Regency Crystal City in Arlington, Va.

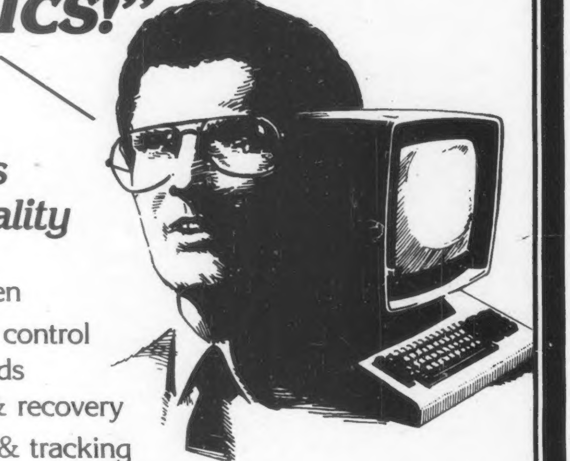
Sponsored by the George Washington University School of Government and Business Administration, topics of the three-day conference will include "Productivity and Morale: Mastering the Work Environment with Micros" and "Micros in Decision Support Systems for Managers."

Speakers at the conference will include Loretta Auer, principal of Arthur Young & Co.; John Alexander, general director of corporate administration at Reynolds Metals Co.; and Thomas Nagy, professor of business expert systems at George Washington University.

Two representatives from Arthur Young will be among the speakers at postforum executive briefings, Thursday, Nov. 15. Topics for the all-day forums will be "Strategic Planning for Micros as Part of the Overall Information Resource" and "Feature Analysis of Leading Hardware and Software."

Registration for the entire program is $775. Cost of the executive forum only is $535 and $295 for the executive briefing only.

More information on the seminar is available from the U.S. Professional Development Institute, 1620 Elton Road, Silver Spring, Md. 20903.



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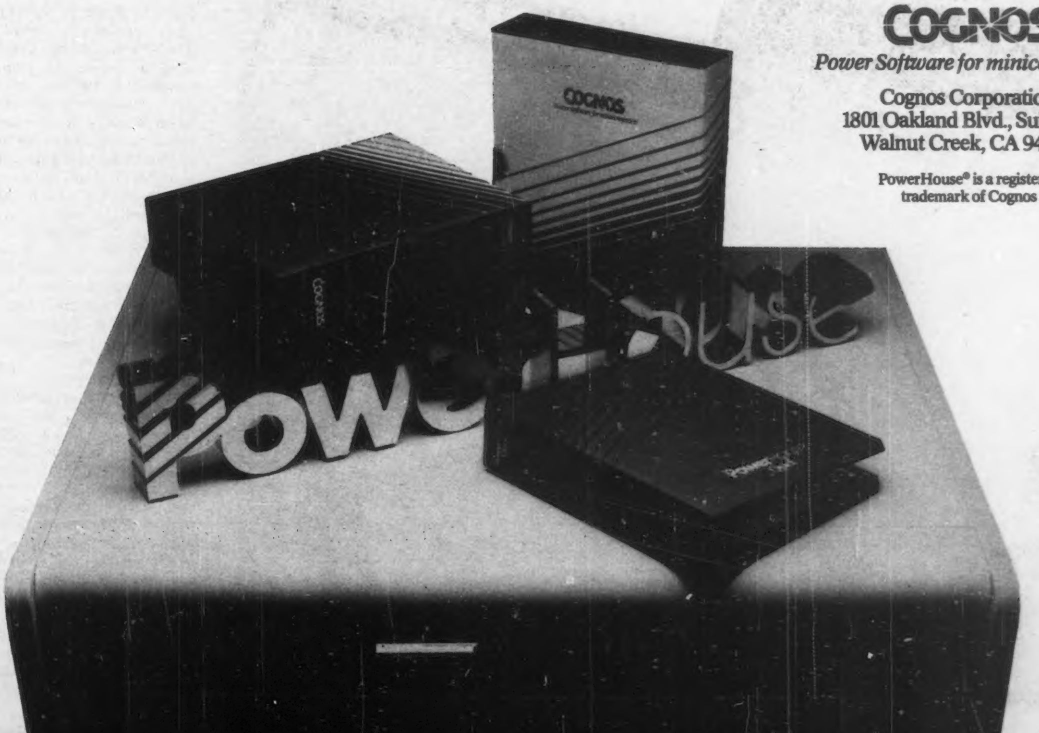

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NEWS

Veterinary data base aids in curing beastly diseases

By Donna Raimondi
CW Staff

ITHACA, N.Y. — Humans are not the only beneficiaries of high technology.

The Cornell University's New York State College of Veterinary Medicine here developed a data base of 5,236 diseases that affect cows, dogs, horses, cats, goats, sheep and swine, according to Dr. Maurice White.

White originated the idea of a computer-assisted differential diagnosis system and, together with Dr. Michael Powers, created a data base to help veterinarians quickly gather a list of disease possibilities based on an animal's symptoms, he said.

The Consultant system has been on-line at Cornell for two years now, White said. Several other universities have access to Consultant, and now Cornell is releasing the data base to outside veterinarians on a limited test basis, he said.

Consultant dial-a-diagnosis help is available to veterinarians with access to a computer terminal, a 1,200 bit/sec modem and a telephone, White said. The number of initial users will be kept to 500 because of computer limitations. The setup has eight ports to access GTE's Telenet Communications network and another eight ports for dial-in, he said.

White said he hopes the test will show how user-friendly the system is and how many people can use it without slowing the system down. If interest in the system builds, the college is prepared to add ports, he added.

The data base resides on a Digital Equipment Corp. PDP-11/44 running under an Intersystems Corp. of Boston M11 operating system, said John Godfrey, assistant manager of the computing facility at the college. John Lewkowicz, director of the computer facility at the college, wrote the program in the Mumps language — developed by Massachusetts General Hospital of Boston — which has a built-in data base management system, Godfrey said.

> *The idea of a computer-assisted differential diagnosis system lead to the creation of a data base to help veterinarians quickly gather a list of disease possibilities based on an animal's symptoms.*

For an initial fee of $75, a user receives a password, a list of clinical symptoms and their alphanumeric codes, information about the data base and help from the college computer facility in using the program, said Karen Redmond, director of public information.

To use the system, a user dials a local number that connects with the Telenet phone system and then enters a password, she said. There is a $25/hour fee, but user time is often less than five minutes, according to White.

Electronic mail is part of the system, enabling users to communicate with each other and with the central computer facility, Godfrey said. Users may opt to dial directly to the computer facility, he added.

More information is available from John Lewkowicz, Director of the Computer Facility, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y. 14853.

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Specifically, the VAX 8600 system incorporates four-stage pipelined processing that increases throughput by allowing the system to execute one instruction while it simultaneously decodes a second, generates an address for a third and fetches a fourth. There's also a floating point accelerator that speeds floating point operations.

Even with all its power, the VAX 8600 system conserves floor space. The CPU fits into the same size cabinet as the VAX-11/780 CPU. Power consumption and air conditioning requirements are similar, too.

VAX 8600 SYSTEM HIGHLIGHTS

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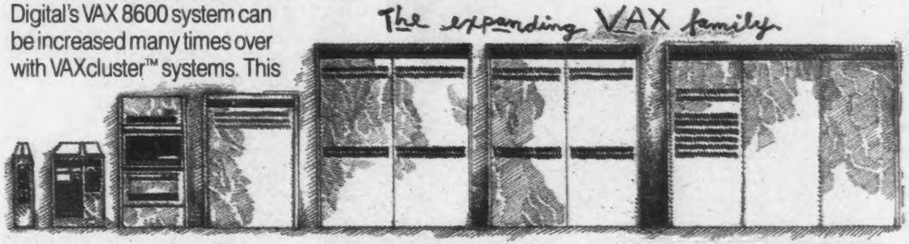

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Philips launches 18,000-extension telephone network

Europe's leading electronics firm hails its private voice/data system as world's largest

EINDHOVEN, Netherlands — During an early October weekend, Philips Telecommunications Industry B.V. launched what it is heralding as one of the largest private telephone networks in the world.

The network, which handles both voice and data communications, is comprised of eight telephone switches with associated network management, cabling and transmission equipment, serving some 18,000 inhouse extensions at Philips facilities located in the Eindhoven districts of Woensel, Tongelre, Stratum, Gestel, Waalre, Strijp and Best.

Philips is considered Europe's largest electronics company, with annual revenues exceeding $16 billion. The company has had its own telephone network in its headquarter city of Eindhoven since 1920. Prior to installing the new network, Philips relied on older equipment — some that dated back to the early 1960s, according to Joop de Wilde, a spokesman for the company. The present network utilizes eight of the vendor's EBX 8000 private automatic branch exchanges (PABX).

> *'We simply cannot function without an efficient and reliable communications network. The network for the Eindhoven region alone, with a work force of 32,000, is critical to Philips' worldwide business.'* —
> Joop de Wilde, Philips Telecommunications Industry B.V.

De Wilde said the network's requirements were outlined to include high reliability; it had to provide access to the subscriber facilities everywhere in the network; it needed to have the capacity to handle speech, text and data communications; it had to demonstrate potential financial savings; and it had to meet all requirements set by the Dutch Postal, Telephone and Telegraph administration.

"The system also had to allow a changeover of all subscribers within one weekend to avoid interruption of business operations," de Wilde added.

With 340,000 worldwide employees, Philips' international operations spanning 60 countries could not suffer a communications breakdown, explained de Wilde. "We simply cannot function without an efficient and reliable communications network. The network for the Eindhoven region alone, with a work force of 32,000, is critical to Philips' worldwide business. . . . not only must it be reliable, but it has to be available 24 hours a day."

This has been achieved by, among other things, distributing the switches geographically over the region, de Wilde said. "A serious failure in one of the PABXs, resulting from a fire, for instance, would therefore not result in a complete network breakdown."

This concept lead to the installation of two tandem switches and six local switches, which are connected to a meshed network that operates as an integrated system transparent to the user.

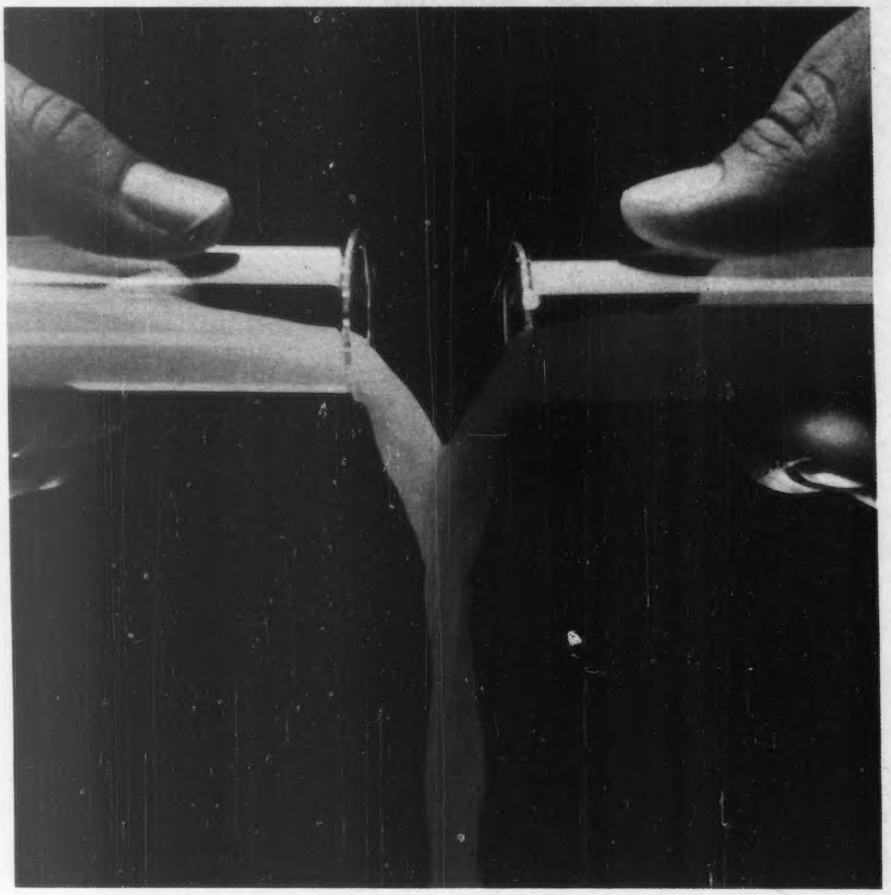
With 100 plants in the Netherlands alone, Philips spends $43 million each year on communications. The cost of operating its worldwide communications network amounts to $288 million a year.

The new processor-controlled switches provide many facilities that increase the accessibility of people and route telephone traffic more efficiently. Incoming calls, for example, can be automatically forwarded to another extension, and the system features automatic redialing on numbers that are busy.

"The question of whether to choose analog or digital switches for the network was, of course, dealt with extensively," de Wilde continued. Philips estimated that by the end of the 1980s, voice will account for 70% of telephone traffic, with the remainder being taken over by text and data communications.

"The outcome is that the Eindhoven network makes use of a digitally controlled analog system that can handle all modern user functions. A processor-controlled switch such as the EBX 8000 can be connected by simple means to all sorts of data terminals. The simultaneous reception of speech and data or text signals over one telephone line is a good example of the exclusive range of functions of the EBX 8000. The system enables the system manager to monitor the network so that traffic can be handled by it in one efficient, integrated way," de Wilde concluded.

Toward Clearer Communications: InteCom discus



INTERNATIONAL REPORT
CW International News Network

AUSTRALIA

SYDNEY — The Administrative and Clerical Officers Association and the Australian Public Service Association have continued bans on the implementation of the Department of Social Security's $85 million Stratplan project, but have dropped their proposed strikes. The Stratplan computer network has been opposed by the unions since its inception on the grounds that it would change or eliminate jobs.

At a recently held meeting of the Arbitration and Conciliation Commission, the unions and the department were urged to continue their search for a compromise.

Meanwhile, an investigation by the Joint Parliamentary Committee of Public Accounts here revealed that the Department of Social Security's Stratplan has run 135% over budget to date and includes "questionable computer backup plans."

The committee's report said that the project was 12 months behind schedule and concluded that the ultimate benefits of the system would prove to be less than originally anticipated.

■

CROWS NEST — Moves by the Australian Taxation Office to tax contractors' companies have come under challenge by the newly formed Contractors Association, which plans to take legal action to prevent such measures.

While many data processing companies and placement agencies have been instructed to deduct special taxes from contractors' salaries, few have actually done so, claiming it is too cumbersome. A Sydney accountant has also claimed that there is a loophole in the tax law; contractors can continue to ignore the tax and still run their companies legitimately.

CANADA

CALGARY — The lack of a proper infrastructure to foster basic research here is posing a real threat to Canadian industry and requires an immediate infusion of cash by the new federal government, warned the head of the Natural Sciences and Engineering Research Council.

Speaking at the Fifth-Generation Computing and Expert Systems Conference held here recently, Gordon MacNabb revealed details of a soon-to-be-released report that recommends spending an additional $48 million on research at Canadian universities.

DENMARK

COPENHAGEN — Dansk Datamatik Center's (DDC) portable Ada compiler has been tested and validated by the U.S. Department of Defense's Ada Joint Program Office. The test ensures that the Ada compiler meets the American National Standards Institute and military standard No. 1815A-1983 Ada language requirements.

The compiler, said to be the first European Ada compiler validated by the Department of Defense, was demonstrated during the recently held Ada Technology Conference in Brussels, where it reportedly ran faster and produced higher quality code than existing Ada compilers. Honeywell, Inc. has signed a nonexclusive licensing agreement with DDC, whereby the American vendor will provide the DDC compiler in all large Honeywell systems based on its Gcos 8 operating system.

JAPAN

TOKYO — Fujitsu Ltd. recently became the primary supplier of mainframes, software and consulting services to Telecom Australia. The Japanese vendor will supply approximately 30 M-380 mainframes to the Australian communications giant.

■

TOKYO — After severing its marketing relationship with a Japanese trading company, Nixdorf Computer AG, West Germany's largest computer maker, formed a subsidiary here called Nixdorf-Japan.

The company is lead by an American named Joe McFatridge and supported at Nixdorf's Dusseldorf, West Germany, headquarters by Yutaka Murata.

■

TOKYO — Hitachi Ltd. has developed a thermal color graphics printer that uses the vendor's thin-film process technology and carriage control system.

The system reportedly features 16 dot/mm resolution and up to 64 shades of color. It prints at speeds up to two page/min. Hitachi plans to bring its product to market in 1986.

UNITED KINGDOM

LONDON — The first phase of the National Westminster Bank's private telecommunications network, valued at an initial $6 million, has been completed, linking 600 of the bank's branches.

The network, said to be the largest in Britain, relies on tandem switches called Telematic DX. The switches are supplied by Plessey Microsystem's Megastream circuits from British Telecom International, according to sources.

The system is expected to connect all of the bank's 3,200 nationwide branches by 1987.

ses voice/data integration.

The manufacturer of the first integrated voice/data switching system considers the issues.

Data is a major factor in office communications today. It's projected that within the next five years, data transmission will increase from the present 2% to 40% of total PBX traffic. That's explosive growth. And it means that companies must accommodate this increase by expanding their present systems or by planning now to replace obsolete systems with ones that can meet those needs.

A look at alternatives.

To keep pace with this change, an organization has two basic choices. First, it can stay with a limited voice-only PBX and create separate data networks. This, however, is a costly, inefficient method, and it becomes increasingly difficult to manage multiple expanding systems.

The second alternative is an integrated voice/data system. By installing one network, a company can have voice and data capabilities at every outlet.

Key benefits are the sharing of resources—devices and software—and consolidated network management. An integrated system is an investment in the future that can pay for itself in the savings of single network administration.

A definition of terms.

Integrated voice/data is sometimes thought of as simply combining voice and data in one switch. But it's really much more. It's the total integration of voice and data through a twisted pair network.

Because a digital system does not distinguish between voice and data, both look the same as they pass through the switch. So it's possible to apply sophisticated voice features to data—least cost routing, conference calls between workstations, callbacks on data terminals and other aids to productivity that are normally associated with voice-only systems.

Major considerations.

Universal Connectivity

One of the greatest challenges facing communications professionals today is the management of changing technology. In an environment where many approaches to office communications call for complete flexibility, only a system designed to be compatible with multi-vendor equipment is a safe choice. Such a system provides the format and protocol conversion capabilities for dissimilar devices to communicate with each other, freeing a company from the need to choose all its equipment from one vendor.

A system should be capable of connecting numerous dissimilar devices to a common network, allowing them to share peripherals, data and functions. This flexibile connectivity also protects your investment in equipment, ensuring its continuing value.

Non-Blocking Traffic

In voice systems, many calls can share one path through the switch because conversations are short and not everyone uses his telephone at the same time. However in data communications each device needs full access through the switch, and the long holding times of data calls place heavy demands on a network. As more data circuits are added to meet growing user needs, a system founded on voice-only design can't handle the traffic and begins to block calls from completion, or to degrade the quality of transmission.

Non-blocking matrix architecture, however, places no restrictions on voice and data access. As the data-to-voice proportions change, the system is reconfigured at the host controller. And there's no new cabling required. In non-blocking systems, savings are soon realized in simplified administration.

Processing Capacity and Speed

Many installed systems operate on 16-bit processors. While this may be adequate power for today's voice-only systems with few data options, it may not be sufficient for tomorrow.

Since a system's processors are the limiting factor, they must offer enough capacity for growth. A system offering 32-bit processors can handle both present and future capacity requirements. It's valuable insurance against obsolescence, with unlimited potential for applications like video and future developments.

The office automation industry is introducing more and more devices that operate at speeds up to 10 Mbps. Only an integrated voice/data system that offers 10 Mbps connectivity and integrated local area networking can successfully carry a company into the automated office environment now evolving.

A view for the future.

In 1979 InteCom introduced the first integrated voice/data system, the IBX™ Integrated Business Exchange, and since then has been setting the pace for the office communications industry.

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We hope this look at the issues of voice/data integration will be useful to you in your system selection. InteCom has met the communications requirements of companies in a wide range of industries. And today, our representatives are ready to help you evaluate your specialized needs.

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Insurer banishes tape headaches with SMF package

PHILADELPHIA — An insurance company here reaped unexpected benefits when it changed the record-keeping method at its systems management facility.

Reliance Insurance Co. here used to lose four or five days worth of systems management facility (SMF) data per month, said Wayne Rosen, senior systems programmer. He noted operational errors caused the majority of problems, such as mounting an incorrect volume of tape or none at all, dumping the wrong data set, indexing and often destroying tapes before the retention period ended.

The Reliance Group is an IBM installation with a 3081G and a 3033N at its headquarters here, a 4341 and a 4381 at its General Casualty Insurance Co. division in Madison, Wis., and two 3033s in its United Pacific Insurance Co. division in Tacoma, Wash., all running under IBM's MVS/CICS operating environment.

Rosen found that IBM's dumping facility did not address all the problems of keeping good SMF records for his company. The standard IBM dumping facility takes information off direct-access storage devices (Dasd) and writes it to separate tapes three to five times a day. "If I wanted information from a week ago last Thursday, I would have to sift through it all to retrieve it,"he said.

Reliance accumulated 240 SMF tapes per month using the IBM dump, Rosen said, and the company's policy demanded retention of 15 months worth of SMF tapes. Once a month, a programmer had to merge files to decrease the volume of tapes. One person was needed almost full-time to maintain, retrieve and merge SMF data, he added.

SMF software test site

The company decided to develop a program in-house to alleviate these problems, but as they were working on it, one of the programmers heard about Value Computing, Inc.'s SMF Express product, Rosen said. SMF Express had just been developed, and Value Computing was looking for test sites.

The package was installed at headquarters almost four years ago and was added to the division offices in 1982.

Since SMF Express' installation, the SMF inventory at Reliance runs to 125 volumes for 15 months, Rosen explained. That number includes a copy of each tape automatically generated by the package on Rosen's instructions. The package does this by switching back and forth on the same tapes when dumping, so that a tape is fully used before a new tape is needed.

The opportunity for human error is gone as the program keeps track of the days and times that information is dumped to tape, Rosen said. "We have not lost a single SMF record," including all the SMF records sent to Philadelphia each month from the processing centers in Madison and Tacoma, he reported.

With the basics taken care of, Reliance has found it can use SMF Express for more than job accounting and charge-back chores. Nine users in Philadelphia and several in the divisions extract information to measure performance, plan capacity, monitor system security and audit all system resources, Rosen said.

Extracts records, tracks trends

Users can gather complete SMF records and extract desired records with highly specific parameters, he added. MIS management can also track mid- and long-term trends, globally or for a particular device. Reliance's corporate management uses SMF Express data to support requests for more equipment or equipment upgrades at the facilities, he noted.

When auditors need security information, they can extract just what was written out by the company's security package by requesting its specific number code, he said.

Rosen said he would like to see Value Computing make performance maintenance on its data base a little easier. "The data base is very sophisticated," he noted. "You have to be very cautious so you won't blitz everything."

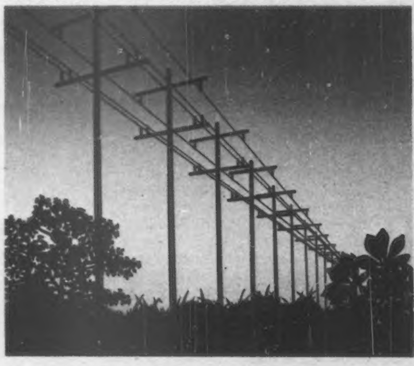
CAM-I focus on trends in AI

ARLINGTON, Texas — The 13th annual meeting of Computer-Aided Manufacturing International, Inc. (CAM-I) will be held Nov. 13-15 at the Sheraton Sand Key Resort in Clearwater Beach, Fla.

Patrick H. Winston, director of MIT's Artificial Intelligence Laboratory, will open the conference with a discussion of "Artificial Intelligence: The Future of the Computer."

On Nov. 14, Prof. Donald Michie, director of the Turning Institute in Glasgow, will discuss "Applying Expert Systems to Automation and Vice Versa." Decision-processing methods will also be a topic at the conference.

Registration for CAM-I members is $375 and $475 for nonmembers. More information is available from CAM-I, Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.



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Testing in IMS environment unsnarls complex project

Package lets natural gas supplier scrap trial-and-error testing methods

SAN ANTONIO — Valero Energy Corp., a major supplier of natural gas to cities and businesses across the Southwest, found a way to test its complicated business systems plan without resorting to trial-and-error methods.

Almost five years ago, Valero was spun off from Coastal Corp., a holding company, said Al Tkacz, manager of data services. In this move, Valero inherited not only a large part of the parent company's natural gas transmission business, but also an outmoded batch data processing system, he said.

Valero's management wrote a long-range business systems plan three years ago that mandated the development of major applications projects, Tkacz said. An IBM 3081, IBM's IMS Data Base/Data Communication on-line system, IBM Personal Computers, communications devices, sophisticated software and an array of peripheral equipment now manage Valero's processing needs, Tkacz said.

One large application project that is still in the design stage is the general ledger, which all the other business applications systems will tie into, Tkacz said. Therefore, many interfaces that require extensive testing need to be considered before going into production, he said. The project is expected to hit the production stage sometime this month.

Because application projects were developing at a fast rate, project code writers were constantly asking Tkacz and Ed Marzuki, Valero's senior data base specialist, to set up test environments.

"We maintain the usual IMS test and production environments, which operate at exclusive times of the day," Tkacz said. "However, for each application analyst, we had to allocate separate data bases, set up control cards, C-lists — commands executed in a group — job control language and, if there was data in the test system data bases, we'd have to move it over to [the analyst's] testing region. It could take up to a day just to set up the testing environment for one transaction," he added.

Another problem Valero had with its application testing methods was that programs ran under simulation, but not in the test region, Tkacz said. That is when Valero went looking for an IMS testing tool and decided to be a beta test site for Test/IMS from Consumer Systems Corp. of Downers Grove, Ill., he said.

Test/IMS provided diagnostic information while testing on-line or batch IMS programs, Marzuki said. Valero's IMS users can check application program logic, IMS interfaces, teleprocessing activity and data base activity, he said. The test program tracks all data base application interaction while in the native IMS environment and provides this information to the user during the entire testing procedure, he said.

Test/IMS has been installed at Valero for almost a year now, Marzuki said. He had the main responsibility for training personnel in the use of Test/IMS, which takes one to two hours, he said. "My goal is to have all of our coders using this product. We're very pleased with the way it has fit into our installation." Most of the 50 people in his department use the package, he said.

"Before, we had the normal trial-and-error testing methods," Marzuki said. "You compile and link your transaction and then run it. If it doesn't work, you try to figure out what went wrong and so forth until all of the bugs are worked out. This was a very inefficient use of personnel and computer."

"Now," Tkacz said, "we can just test within the IMS environment and receive all of the information we need about our transactions."

Tkacz sees benefits in both the data services and application areas. The data base and data are already present and defined in IMS; the data service people only have to set up a test one time now, he said. "Because we're testing under IMS and not simulation, we definitely have improved our testing while reducing the use of valuable resources like [IBM's] TSO and CPU time," he added.

Valero has volunteered to be a beta test site for Release 3.0 of the Test/IMS, which is now being installed there, Marzuki said. The new release will permit Test/IMS to remain linked to a program and turned on or off as needed. Other features include the ability to obtain a minidump for abends, change from a terminal any Test/IMS diagnostic options, measure standard work unit variances, save on-line output for later printing and browsing, exclude diagnostics either by program communications blocks (PCB) or PCB type and limit diagnostic output, Marzuki said.

Marzuki said there were some problems with the transaction timing, Vsam abends and some system dumps. These were all corrected to his satisfaction, he said. "We expected to have problems, as we were a beta test site," he said.

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Purchasing system trims center's costs

University of Texas Health Science Center

HOUSTON — It costs a lot of money to train medical students and provide them with the supplies and services they need, especially if the business procedures that support them are performed manually.

When the University of Texas Health Science Center here decided to automate its accounting functions, it had to find a system that would not only cut those business expenses, but would also conform to state of Texas regulations, said Robin Lee, coordinator of financial projects.

In October 1980, the center launched an extensive effort to study its business needs and started to investigate accounting software packages to automate its accounting and purchasing processes, Lee said. The center decided on the College and University Financial System (Cufs) from American Management Systems, Inc. of Arlington, Va., after grading several vendor products, partly because it was a system that could be customized to conform with pertinent state regulations.

Today, most accounting transactions at the center are handled without journal vouchers, once a required step for nearly all transactions, Lee said. Staff members access the system through IBM 5520 word processing system terminals, hard-wired telex terminals and dial-up modems. Staff in every school can enter purchase requisitions and requests for goods or services directly into the system, she added.

Funds are certified immediately when purchase requisitions are entered into the system, Lee said. If there are sufficient funds in the account to cover the purchase, the computer accepts the transaction. A report that lists all requests goes to the purchasing department twice a day.

After a requisition is accepted by the IBM 4341 computer, Lee said, a purchase officer adds specifications and downloads from the main computer, which converts a data file into a word processing file. The officer edits and manipulates the file, creating interim documents. The officer sends the bid out, and depending upon responses, the word processing document is reedited and uploaded to the main computer, Lee said. The file can be processed without rekeying. When the system accepts the file, the buyer requests a printout, and it is run immediately, she added.

The Health Science Center incorporated several important elements into its purchasing subsystem, including a commodity table, vendor table and a bid table, said Brian Yeoman, director of procurement and materials management.

The system constantly updates totals for all items purchased and immediately tells a buyer whether or not the requested item comes under a state or local contract, Yeoman said. In the Health Science Center's case, 15% of all dollars spent are handled through such contracts, he said.

The vendor table handles reimbursements and travel for employees and writes checks for student loans, Yeoman said. In addition, the system maintains profiles for individual vendors, he said.

An employee making a request calls up a vendor profile, which includes 15 commodity codes for items that particular vendors routinely supply, Yeoman said. The vendor table also contains a section of profile identifiers that give more in-depth information on each vendor.

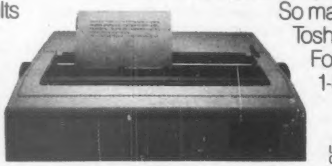
The bid table ties into the commodity table. A buyer logs a commodity code into the bid table for an order and the table presents a list of every vendor in the area who sells that item, Yeoman said.

The Health Science Center wanted the system to work on the financial concept of the three-way match: It tracks purchase orders and receives reports and invoices. "If one of the the three is missing, or if there is a discrepancy, the system announces that a problem exists," Yeoman said.

The Delegated Purchasing Authority function allows departments to spend up to $150 a day in each account to satisfy immediate needs, Yeoman said. The system operates under preset rules and immediately encumbers the funds as the transaction is accepted.

Because the number of users has grown from 100 to 750 on Cufs and other systems, response time is slow. The center will lease another computer in the fall to alleviate waits of up to 2½ minutes in peak times.

The Health Center currently employs 33 staff members in the purchasing department, and with the new system, expects to cut this number by 20% through attrition within the first year of use, Lee said.



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Tool keeps firm on course during postsale transition

ANAHEIM, Calif. — Can a $20 million corporate division get its financial management software up and running in just 30 days when it is suddenly cut off from the parent company's system?

That was the problem Sensormedics' — now Sensormedics Corp. — management faced recently when it was informed that the company had been sold to a group of private investors. Headquartered here, Sensormedics was the physiological measurements division of Beckman Instruments, Inc. Engaged in the design and manufacture of noninvasive diagnostic equipment used by cardiologists and nutritionists in exercise testing, critical care and research, Sensormedics has some 250 employees worldwide.

Although Beckman had given notice more than a year earlier that a sale was possible, the actual sale left Sensormedics management in a time crunch. About 5,000 files in the customer records base, 2,000 vendor files and an equal number of both open accounts payable and receivable files were interspersed among 50,000 files in Beckman's computer system. About 5,000 general ledger files were also stored in a centralized general ledger system used by the parent company. All of those files would have to be identified and entered into the data base of Sensormedics' new financial system.

"We knew Beckman was going to have a carryover on some systems to ease the transition," controller Don Eide said. "My position was, in order to run our business, having the financials operational quickly was of the greatest importance.

"We could not have our money going to Beckman," Eide continued. "We had to manage our own receivables, and we could not have Beckman paying for our business. We had to put up a customer master file and a vendor master file. We had to redefine our chart of accounts and be up and loaded, writing checks, in less than 30 days."

After selecting Hewlett-Packard Co.'s HP 3000 as its operational hardware, Sensormedics began examining the available software compatible with that system. Eide and others studied the inventory management, manufacturing resource planning, bills-of-material and financial capabilities of the software under review.

Implemented Compass

Upon completion of the review project, Sensormedics selected Woodland Hills, Calif.-based Western Data Systems, Inc.'s Compass financial and manufacturing management system. While awaiting delivery of the HP 3000, Sensormedics implemented Compass on Western Data Systems' time-sharing service, and a project plan was developed.

Initially, the company's customer base files were isolated from Beckman's massive system. Other steps were then completed in sequence: building vendor and open receivables and payables data bases; building a chart of accounts; and formatting financial statements.

Complicating the financial installation was the fact that the company was also being cut off from centralized engineering information, such as item master files, inventory files and routings. Thus, progress had to be made on the development of purchase order, sales order and work order processing.

As the initial 30-day period ended, Sensormedics' first financial statement was produced, and the general ledger, accounts payable and receivable files became operational. The company is currently finishing work on the manufacturing system, which was primarily manual before the installation of Compass.

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Mini system with government accounting standards

ELDON, Mo. — In City Hall here, where typewriters used to clatter and volumes of 12-column ledger paper piled up monthly, a small minicomputer sits as efficient and sophisticated as many corporate superminis.

In October 1983, the city of Eldon (pop. 4,342) installed an on-line system to process all of its data. Eldon chose an Applied Digital Data Systems, Inc. (Adds) Adds Mentor 3000 and Governmentor software supplied by Information Solutions, Inc., headquartered in Englewood, Colo. The Mentor 3000 has 256K bytes of main memory, a 30M-byte disk, with another 30M bytes on order, and a tape backup setup. Eldon uses five terminals, manned by fairly unsophisticated users whose previous DP experience for the most part consisted of working with the service bureau that previously handled the city of Eldon's data processing.

Because it is a municipal government, Eldon had to advertise for bids for the equipment. Fourteen bids were received, and the selection was narrowed down to four finalists. A team of evaluators visited users and attended vendor demonstrations.

A choice is made

According to LaVerne McLain, Eldon city clerk, the Adds system was chosen because the way it operated was closest to Eldon's existing procedures and it incorporated government accounting standards in the software.

McLain said that implementing three functions took from system delivery in October 1983, to going live with fund accounting, payroll and utility billing in December 1983. Tapes were converted for the utility files.

Three hundred files of the total 3,000 files converted were lost because of packed fields. The financial information was keyed in from source records, running parallel with the service bureau operation until the Eldon system was fully operational.

Eldon encountered another problem during implementation: Running water department bills would hang up the system. Adds came and replaced a board, and the problem was cured.

McLain reported that the in-house system affected most of her work day. "When I make a journal entry, I don't have to wait a week to see the results. I can print an updated general ledger immediately. When someone needs a special report, I print it for them. I don't spread out a dozen ledgers to look up information. Our minicomputer system saves time and gives us more control over our own operations than we had a year ago."

McLain said that before the mini was installed, the city used a service bureau several miles away. After manually preparing the data, the staff mailed it to the service bureau for processing. "Turnaround time was about a week," McLain recalled, "unless we found errors in the data. Then we waited another month for the corrected information."

Eldon's mini reduced utility billing time to a fraction of what it used to be. Before the installation, the city generated all bills manually. Two people worked full time to calculate and type 3,000 bills and several hundred delinquency notices each month. Now the process takes one person about two hours. The city staff uses the time it has saved to serve the community in other ways. "We've increased our services by about 30%," McLain reported. "The

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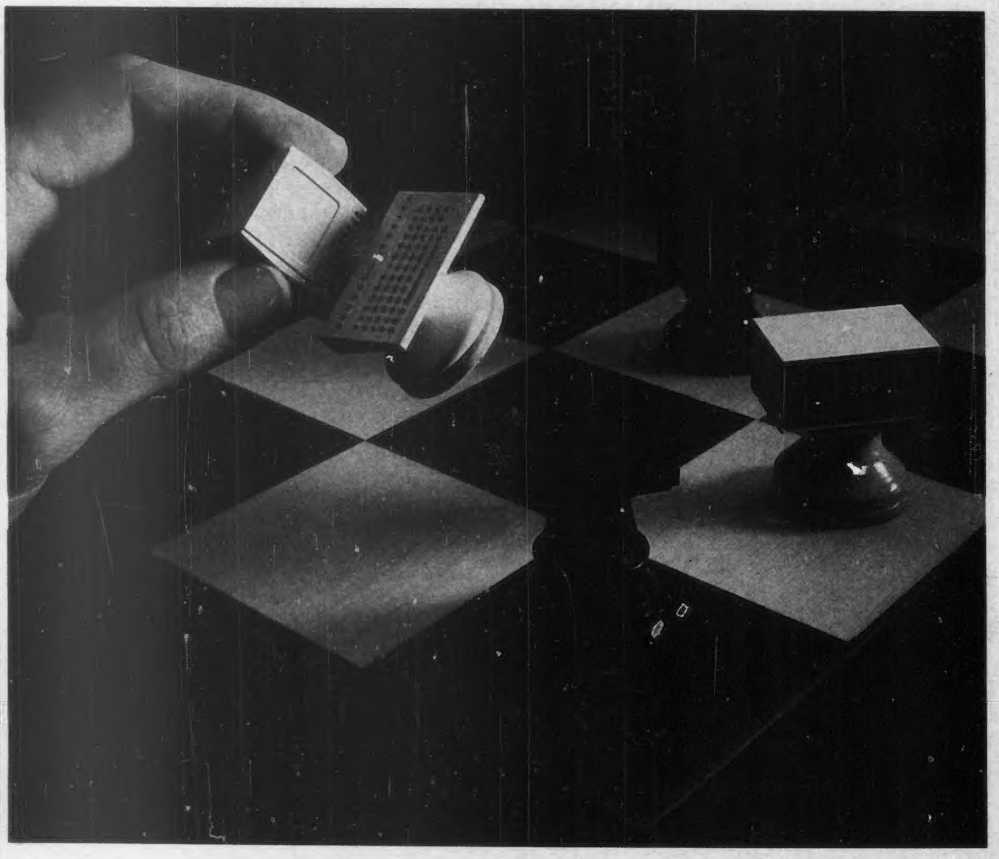
You have to think ahead a few moves to win the network game.



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built-in software provides key to city hall efficiency

minicomputer has given us time to complete projects that we couldn't accomplish before."

The time saved by computerizing payroll is equally significant. Before the city purchased its computer, Eldon's payroll clerk spent two or three days twice a month preparing paychecks for the staff of about 50 people.

"We've cut that process down to two or three hours now, and at the same time, we give our people more information. Our old paychecks contained information for only one pay period. The new checks list sick leave and vacation days and summarize earnings and deductions for the entire year to date. I know this helps people at tax time, McLain said."

Customers and voters notice the city's improved organization and increased efficiency. "The service bureau was never quick to update our customer lists," McLain remembers. "When someone requested a name change, I'd say, 'I'll tell the computer.' I could tell that no one was satisfied with that answer." Now customers walk into McLain's office and watch while she modifies their records on the terminal screen.

With a more efficient staff and tighter control over data, the city produces higher quality financial information. In the past, time constraints prevented the city from generating current, accurate financial reports on a regular basis. The service bureau simply could not process information quick enough. Sometimes administrators compromised and accepted close estimates or outdated figures. Other times, the staff worked long hours to produce manual reports.

Daily updates

With the Mentor system's on-line processing capabilities, most of Eldon's information is updated daily, McLain said. Many reports are as current as the staff's last transaction. Even complex functions, like fixed-asset depreciation, are accurate and up-to-date. "We used to wait until our year-end audit to calculate depreciation costs," McLain said. "We post them monthly now. We know exactly where we stand every month, instead of only once a year."

The city's improved financial reporting contributed to better city management, according to Eldon. "We're in a stronger financial position. We know exactly where our cash is spent, and we have pinpointed most areas of rising costs."

Since the city knows exactly how much cash it has, and since it controls all accounting in-house, it can transfer cash more readily than in the past. "It's much easier to make profitable short-term investments," McLain said. "We're more sophisticated with cash management than we used to be, simply because we have the time and information that we need."

After increasing the city's control over its finances, improving the efficiency of its staff and expanding its services to citizens, the city of Eldon is proud, but not complacent. McLain looks to the future. Besides the extra 30M-byte disk on order, office automation functions such as word processing and spreadsheets have been ordered. And, McLain said, "This quarter, we're computerizing tax billing."

ATEGIES

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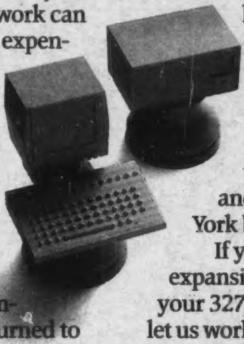

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Multiuser micro system relieves case of Pepsi-Cola

SAN FRANCISCO — Early in 1983, the Pepsi-Cola Bottling Co. here had a case of the growing pains.

The firm realized that its NCR Corp. 8550 mainframe was being strained by the growth of the soft drink industry and the complicated dynamics of its particular operation. Processing the ever-increasing volume of data necessary to ensure maximum efficiency and flexibility in running the company had become a critical issue.

This multimillion-dollar operation has been in business since the early 1900s. From its headquarters and distribution center here, it produces and distributes Pepsi and other soft drinks at nine different locations throughout the Greater San Francisco Bay area.

The soft drink company's main concern focused on eliminating the vulnerability of controlling the nine distribution centers' remote processing needs with a highly centralized data processing system — dedicated terminals time-sharing the NCR 8550. As the type and amount of data at the distribution centers grew in complexity and quantity, living with traditional telephone-line transmission and mainframe downtime problems became prohibitive.

> *It was important to find a system that would not only provide immediate solutions, but would also offer the necessary opportunities to grow and perform more functions.*

An additional concern focused on incremental growth. With the automation of more and more job functions at the distribution centers, it was important to find a system that would not only provide immediate solutions, but would also offer the necessary opportunities to grow and perform more functions at a cost-effective, entry-level price.

Richard Campodonico Jr., director of data processing and a third-generation member of the company's founding family, began searching for the system that would provide these solutions. He wanted to keep the NCR computer system as the central source of all corporate accounting and MIS functions. At the nine remote sites, he thought of distributing the work load by installing some type of supermicrocomputer system that would accommodate his growing DP needs.

Campodonico wanted a system that would pay for itself and would be reliable and easy to implement for multiusers. He said he felt that the NCR was performing its job, but like all other mainframes, was basically a mass storage device. He needed a multiuser feature because each distribution branch system had simultaneous tasks like order processing and route settlement to perform. Orders had to be ready every day for drivers to ensure timely deliveries to their customers.

Campodonico said he studied about 20 different options before narrowing the field of choices to a handful of firms offering supermicrocomputer systems — Hewlett-Packard Co., Sage Computer Technology, Inc., Molecular Computer, Inc. and OSM Computer Corp. He finally determined that the OSM Zeus family of multiprocessor, multiuser microcomputers could satisfy his company's needs. "The Zeus won out on function and price," he said.

Pepsi found that the Zeus 3X offered multiuser global file management. This combination of hardware and software gave Pepsi multiusers file sharing.

Processing activity at Pepsi's remote distribution centers focuses on order entry and order processing. Orders

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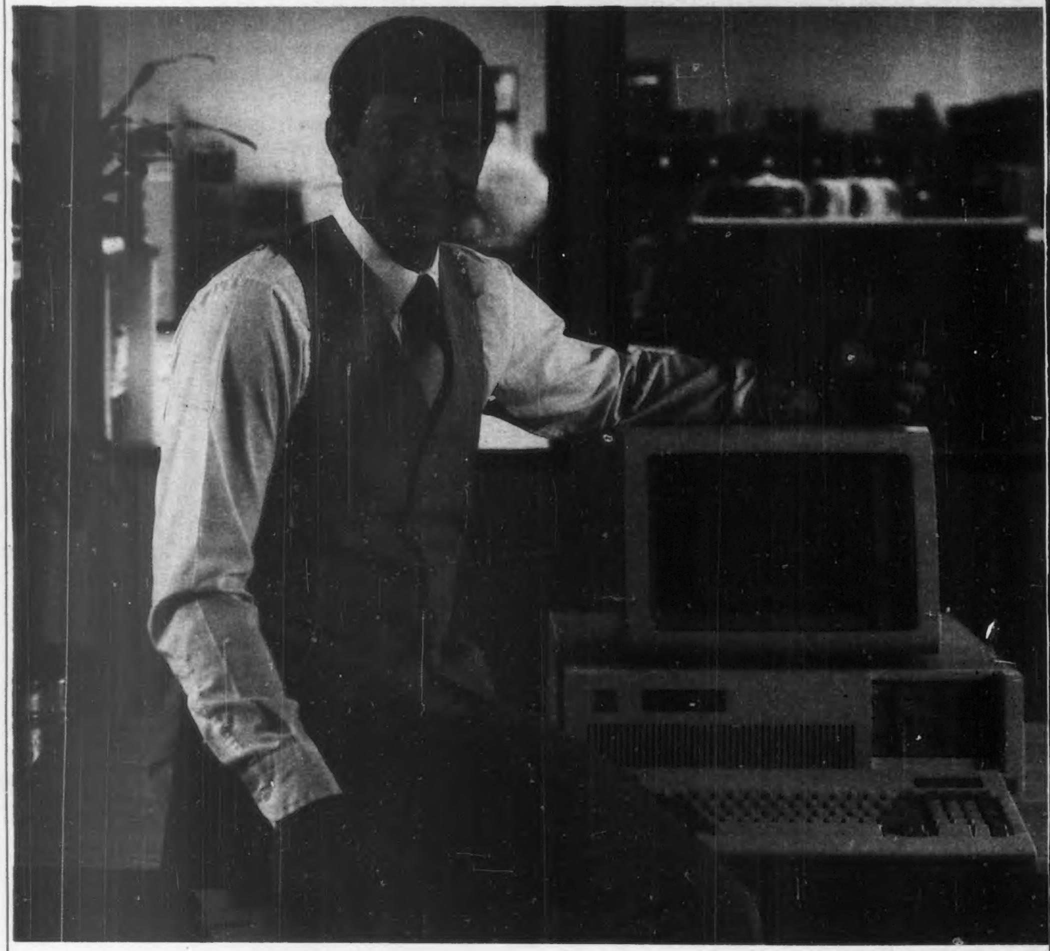

growing pains, eliminates processing vulnerability

are placed by salesmen in the field and are transmitted to the Zeus micro through the use of portable MSI Data Corp. terminals.

Next, the Zeus presents the dispatcher with an order itinerary that enables the dispatcher to decide which orders will be assigned to which routes.

The system then prints out load documents to tell loaders on the night shift how much of the product must be loaded on each particular truck. At this stage, delivery tags accounting for all of the cargo in the trucks are created.

Processing flexibility is critical in handling route settlement — the focal point of the business activity taking place at the distribution centers. Route settlement is a daily activity that the system processes after a driver has returned from his delivery route. A driver leaves with delivery tags and the product to accompany each customer's tag.

When the driver returns, he has a combination of tag copies (indicating the delivery with or without changes), cash and any surplus of the product. The system makes sure all of the product that was loaded onto the truck is accounted for.

Route settlement provides critical sources of information for customer sales history, accounts receivable and product inventory.

Information on tags of the product delivered that day is fed from the Zeus micro to a host Zeus micro at company headquarters in San Francisco. Each night, the two micro systems communicate and make the necessary data interchanges. These interchanges include master file updates.

The Zeus host at headquarters then incorporates all changes made in the master files (customer account, product inventory, price lists, route files and order files) for the NCR mainframe.

> *'The Zeus micro displayed great capability in handling our most demanding processing needs.'*
> — Richard Campodonico Jr., DP director

"The Zeus micro displayed great capability in handling our most demanding processing needs," Campodonico said.

However, Campodonico pointed out that the Zeus system has not been without some shortcomings. One of those problems involves the maintenance agreement OSM has with RCA Service Co. "We haven't had what you would call excellent experience with the RCA personnel," he said, citing instances in which servicemen were improperly trained.

He claimed another shortcoming has been weak documentation with the system.

Pepsi-Cola's future plans include automating some of the many clerical functions at the branch operations and implementing a system for automated dispatching.

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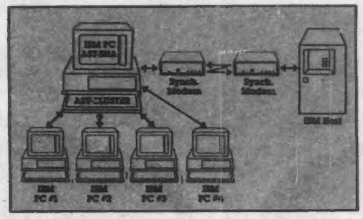

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NEWS

Automation push pays off for frugal publishing firm

SYRACUSE, N.Y. — The Scotsman Press, Inc., publisher of 16 shoppers and one weekly newspaper here, was a few steps removed from the Gutenberg press when the company decided to automate its classified, accounts receivable and production processing functions in 1981.

The publishing and printing company, headquartered here, handled more than 2,000 display and classified ads each week by hand. Manual systems for sales representatives were cumbersome and error-prone, and invoices and statements to advertisers required two separate mailings. Scotsman took the advice of a programmer who said he could write code for a Wang Laboratories, Inc. system that would automate the required tasks. In 1981, Wang delivered a Wang Office Information System (OIS) 140-1 with an OIS 115 for backup to Scotsman.

The OIS 140 came with a 26.8M-byte disk, three display terminals and two dot matrix printers. The company later installed an interface to Compugraphic Corp. 8600 typesetters to allow text edited on the Wang system to be typeset on the Compugraphic system. The company felt Compugraphic had greater typesetting capability than Wang in 1981, according to A. Loren Colburn, director of operations for Scotsman.

The company has since expanded the Wang memory capacity to 80.4M bytes, Colburn said. Programs for the OIS are written by Newark Computer Service of Newark, N.Y.

Since installing the system, Scotsman has added six free advertising shoppers in Binghamton, N.Y., without increasing the staff. The additions have allowed the company to absorb a 30% jump in advertising volume, Colburn said.

"What really kicked us into automated systems was our classifieds," Colburn said. Typesetting the ads required constant rekeyboarding and was burdensome, he said. The OIS system allows Scotsman to store the customer's name and the number of weeks the ad is to run, along with the ad text, streamlining the flow of paperwork.

Cut down on errors

Because the cost of a service bureau doing the work was high, the first software was written for display advertising. Ad sales representatives fill in information for each ad account listed in the program by an account number. All billing and tear sheet requests are included under the account number, as well as production information such as ad size, editions to run and whether the ad should repeat with a copy change. This feature cut down on errors from accounts receivable not getting word of ad changes or cancellations.

Another program generates weekly and monthly invoices, which are combined with statements on one form. "We've eliminated one full mailing a month," yielding a monthly postage savings of $240, Colburn said.

In the production department, hours of manual work have been eliminated by the Wang system, Colburn said. The department formerly recorded display ads in a production log and made up a dummy page layout for each edition. Because the dummy pages are made up beginning with the largest size ad available, the log is scanned again and again for ads in declining order of size. The OIS system lists the available ads in descending order of size automatically.

The need to retype ads to be repeated was a former production bottleneck. The Wang system automatically transfers entries to be repeated — 150 to 200 per week — to the next week's file. "The system has saved us a lot of time," Colburn said.

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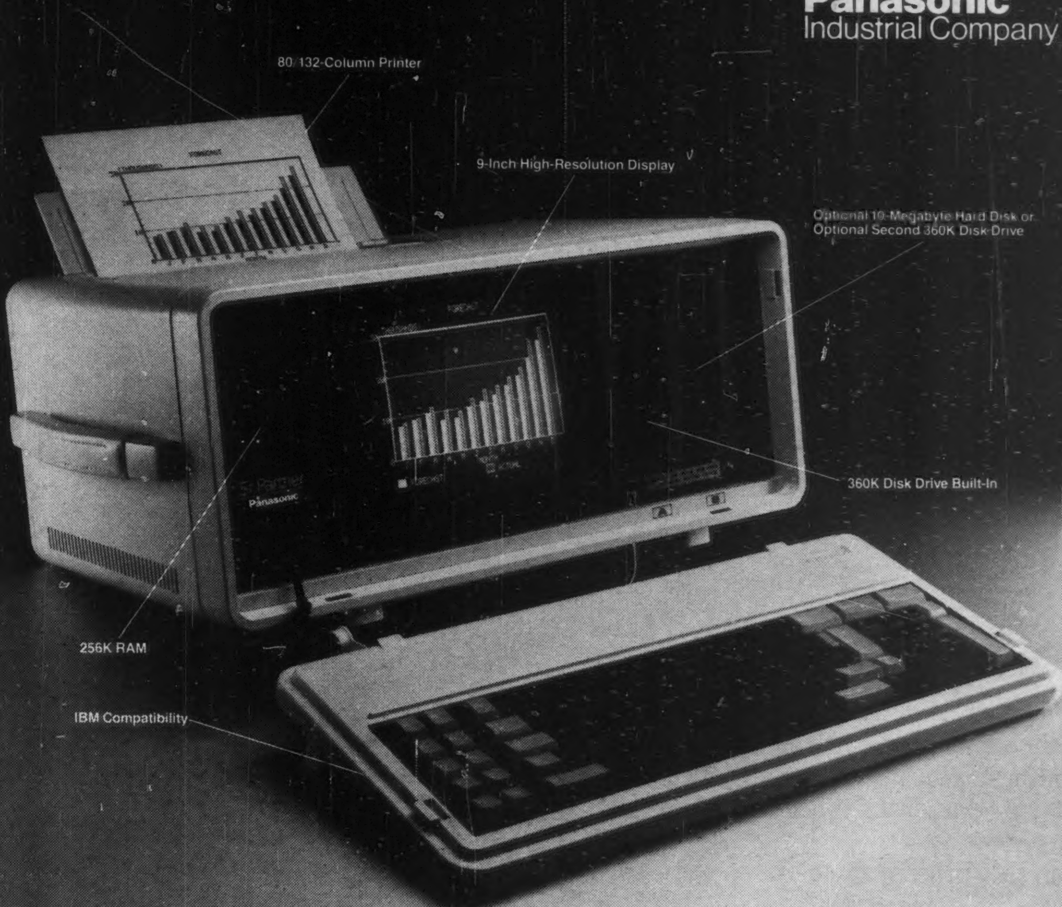
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CALENDAR

WEEK OF NOV. 11

NOVEMBER 11-13, WASHINGTON, D.C. — **Software Maintenance '85.** Contact: Nicholas Zvegintzov, General Chair, Software Maintenance '85, #5F, 141 St. Marks Place, Staten Island, N.Y. 10301.

NOVEMBER 11-14, SAN FRANCISCO — **Information Industry Association's 16th Annual Conference & Exhibition.** Contact: Information Industry Association, Suite 400, 316 Pennsylvania Ave. S.E., Washington, D.C. 20003.

NOVEMBER 11-14, RENO, NEV. — **Association for Computing Machinery Siguccs User Conference XII.** Contact: Ellen Jacobson, University of Nevada Computer Center, Computer Center Building, P.O. Box 9068, Reno, Nev. 89507.

NOVEMBER 11-14, SAN DIEGO — **Software International North American Users Group Conference.** Contact: Software International Corp., One Tech Drive, Andover, Mass. 01810.

NOVEMBER 11-15, PHILADELPHIA — **Fifth Annual Data Training Conference and Exposition.** Contact: Sandra Mack, Conference Coordinator, Warren/Weingarten, Inc., 38 Chauncy St., Boston, Mass. 02111.

NOVEMBER 12, NEW YORK, N.Y. — **Introduction to the IBM Personal Computer.** Contact: Center for Advanced Data Processing, Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

NOVEMBER 12, PORTLAND, ORE. — **Local-Area Networks.** Contact: Thomas J. Bisacquino, Director of Education, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

NOVEMBER 12-13, BELTSVILLE, MD. — **The Engineer as Manager.** Contact: Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

NOVEMBER 12-13, PHEONIX — **Managing Information Centers Effectively.** Contact: Thomas J. Bisacquino, Director of Education, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

NOVEMBER 12-13, SEATTLE — **Discovering Lotus 1-2-3.** Contact: Data-Tech Institute, 386 Frankiin Ave., P.O. Box 569, Nutley, N.J. 07110.

NOVEMBER 12-13, BOSTON — **Operating Systems for Personal Computers.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

NOVEMBER 12-14, PARSIPPANY, N.J. — **Vsam in Cobol.** Contact: Chubb Institute, 8 Sylvan Way, Parsippany, N.J. 07054.

NOVEMBER 12-14, SAN DIEGO — **Planning for Integrated Information Systems.** Contact: Enterprise Information Systems, Inc., P.O. Box 1154, Greenwich, Conn. 06830.

NOVEMBER 12-14, CHICAGO — **The 11th Annual Computer Security Conference.** Contact: Carol Smith, Computer Security Institute, 43 Boston Post Road, Northborough, Mass. 01532.

NOVEMBER 12-14, SEATTLE — **CICS Internals for Systems Programmers.** Contact: Betty Bruce, Education Coordinator, Goal Systems International, Inc., Goal Systems Building, 5455 N. High St., Columbus, Ohio 43214.

NOVEMBER 12-14, TORONTO — **Data Base Administration and Data Resource Development.** Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

NOVEMBER 12-14, PARSIPPANY, N.J. — **Data Processing for the Non-DP Manager.** Contact: Chubb Institute, 8 Sylvan Way, Parsippany, N.J. 07054.

NOVEMBER 12-14, DENVER — **Systems Project Management.** Contact: Thomas H. Bisacquino, Director of Education, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

NOVEMBER 12-14, COLUMBUS, OHIO — **DOS/VSE Internals, Debugging and Problem Determination.** Contact: Betty Bruce, Education Coordinator, Goal Systems International, Inc., Goal Systems Building, 5455 N. High St., Columbus, Ohio 43214.

NOVEMBER 12-14, MIAMI — **Bank Internal Auditing Level II.** Contact: Executive Education Department, 810 Seventh Ave., Floor 28, New York, N.Y. 10019.

NOVEMBER 12-14, MINNEAPOLIS — **VM/SP Structure, Flow and Tuning.** Contact: Betty Bruce, Education Coordinator, Goal Systems International, Inc., Goal Systems Building, 5455 N. High St., Columbus, Ohio 43214.

NOVEMBER 12-15, LOS ANGELES — **Networking for the '80s.** Contact: Institute for Communications and Information Management, P.O. Box 8, Pine Mountain, Ga. 31822.

NOVEMBER 12-15, LOS ANGELES — **Building for the Future.** Contact: Institute for Communications and Information Management, P.O. Box 8, Pine Mountain, Ga. 31822.

NOVEMBER 12-16, DALLAS — **System Design.** Contact: QED Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 12-16, ROANOKE, VA. — **Basic Systems Analysis.** Contact: Mr. Thomas Bisacquino, Director of Education, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

NOVEMBER 12-16, BOSTON, — **CICS Command-Level Programming.** Contact: QED Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

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N.H. — **C Programming Workshop.** Contact: Suzanne Battista, Course Manager, Plum Hall, Inc., One Spruce Ave., Cardiff, N.J. 08232.

NOVEMBER 12-16, RICHMOND, VA. — **Advanced Systems Analysis.** Contact: Thomas Bisacquino, Director of Education, Association for Management Systems, 24587 Bagley Road, Cleveland, Ohio 44138. Also being held Nov. 12-16 in Los Angeles.

NOVEMBER 13-14, WASHINGTON, D.C. — **Introduction to Personal Computers.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

NOVEMBER 13-14, SAN FRANCISCO — **C Programming Language.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

NOVEMBER 13-14, WASHINGTON, D.C — **The $12 Billion Carrier's Carrier Gamble.** Contact: Phillips Publishing Co., 51 E. 42nd St., New York, N.Y. 10017.

NOVEMBER 13-14, SAN JOSE, CALIF. — **Realistic Applications of Personal Computers in Business.** Contact: Peat, Marwick, Mitchell & Co., Executive Education Department, 810 Seventh Ave., Floor 28, New York, N.Y. 10019.

NOVEMBER 13-15, CHICAGO — **SNA Seminar.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 13-15, SAN FRANCISCO — **Analytic Performance Modeling.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 13-15, CHICAGO — **Interface I.** Contact: Cheri Willetts, Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, Mich. 48121.

NOVEMBER 13-15, CLEARWATER BEACH, FLA. — **Man or Machine: A Choice of Intelligence.** Contact: Rhonda Gerganess, Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.

NOVEMBER 13-15, CHICAGO — **Synergy '84.** Contact: Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, Mich. 48121.

NOVEMBER 13-16, WASHINGTON, D.C. — **Digital Image Processing.** Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45405, 6305 Arizona Place, Los Angeles, Calif. 90045.

NOVEMBER 13-16, BOSTON — **Data Base: A Builder's Guide.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 13-16, LOS ANGELES — **Computer Graphics.** Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45405, 6305 Arizona Place, Los Angeles, Calif. 90045.

NOVEMBER 13-16, BOSTON — **Human Relations: Productive Working Relationships.** Contact: QED Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 13-16, WASHINGTON, D.C. — **Designing Effective Man/Machine Interfaces.** Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45404, 6305 Arizona Place, Los Angeles, Calif. 90045.

NOVEMBER 13-16, PALO ALTO, CALIF. — **Modern Pattern Recognition Systems.** Contact: Ruth Dordick, Integrated Computer Systems, 6305 Arizona Place, P.O. Box 45405, Los Angeles, Calif. 90045.

NOVEMBER 13-16, BOSTON — **Data Communications.** Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45405, 6305 Arizona Place, Los Angeles, Calif. 90045.

NOVEMBER 14, ROCKVILLE, MD. — **Management Skills for Women in Business.** Contact: Center for Management and Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

NOVEMBER 14-15, BOSTON — **Data Base Concepts.** Contact: QED Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 14-16, NEW YORK — **Software Maintenance Techniques.** Contact: Registrar, Control Data Corp., 6003 Executive Blvd., Rockville, Md. 20852.

NOVEMBER 14, ROCKVILLE, MD. — **Management Skills for Women in Business.** Contact: Center for Management and Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

NOVEMBER 14-16, PHILADELPHIA — **CICS Testing and Debugging.** Contact: QED Information Sciences, P.O. Box 181, 170 Linden St., Wellesley, Mass. 02181.

NOVEMBER 14-16, ATLANTA — **X.25 and Packet-Switching Networks.** Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va. 22015.

NOVEMBER 14-16, SAN FRANCISCO — **Evolving to Electronic Banking.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

NOVEMBER 14-18, LAS VEGAS — **The Sixth National Fall Conference and Exposition for Independent Sales Organizations.** Contact: The Interface Group, 300 First Ave., Needham, Mass. 02194.

NOVEMBER 15, WASHINGTON, D.C. — **How to Use Wordstar.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

NOVEMBER 15-16, WASHINGTON, D.C — **Software Quality Assurance and Verification and Validation.** Contact: Education Foundation of the Data Processing Management Association, c/o State of the Arts Seminars, Department SQA, P.O. Box 3608, Torrance, Calif. 90510.

NOVEMBER 15-16, LOS ANGELES — **SEC Accounting and Periodic Reporting.** Contact: Peat, Marwick, Mitchell & Co., Executive Education Department, Floor 28, 810 Seventh Ave., New York, N.Y. 10019.

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EDITORIAL

VDT emissions again an issue

Recent findings regarding radiation emissions from VDTs [CW, Oct. 29] have opened the door once again for much-needed discussion on the potential health risks posed by these terminals.

For the 10 million Americans who work with VDTs, reports published last week in *Computerworld* and elsewhere contained both good news and bad news. First, the good news. While scientists in the U.S. have said radiation emissions from VDTs are in some respects similar to those used in experiments that caused defects in chicken embryos, there still appears to be no concrete evidence that VDTs are harmful.

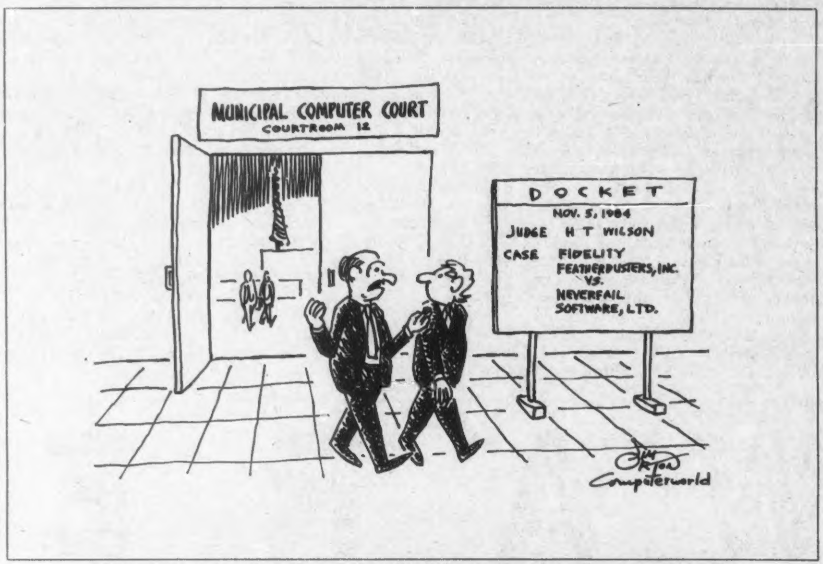
Specifically, last week's news revealed that researchers are hard-pressed to duplicate with VDTs the magnetic field pulses that produced the so-called "Delgado" effect created more than two years ago by Dr. Jose Delgado of Madrid. The pulse waves from VDTs identified in the findings were similar in height and intensity, but not in configuration. Scientists have found that when the shape of Delgado's waves were altered in any way, the harmful effect is nullified.

The other good news for VDT workers lies in the response to the issue from all corners. Members of the scientific community, government agencies and business groups have not put the VDT safety issue to rest. Research in this area continues, and businesses are carefully monitoring research results.

Lacking any definitive indications of health hazards and any protective laws for VDT operators, clerical workers are turning to union contracts to address safety concerns. Some unions are using a National Institute for Occupational Safety and Health study conducted in 1980 — two years before the Delgado experiments — as a basis for developing contract language.

In 1981, the United Auto Workers Union was among the first to incorporate VDT issues into its contract with Boston University. Since then, each union contract takes the issue "a little further along," a union spokeswoman told *Computerworld*. Because VDT health considerations are new territory for both workers and businesses, it can be best explored with the results of additional research.

The bad news is the VDT health issue remains unresolved. Given the ambiguity that now exists in the area of VDT safety, it is in business's best interest to encourage more VDT research so that workers' concerns can be properly addressed and laid to rest. Until more results are in, however, business can expect more pressure from workers in this area, applied in ever new ways.



'We're sure to be a hung jury — I can't tell the legalese from the computerese.'

LETTER

Expand horizons of telecommuting

In "The office away from the office," [CW, Sept. 17] Gil E. Gordon presents telecommuting as an alternative for office work in which the emphasis is placed on minimizing travel by people whose jobs can be be performed independently or in relative isolation. That is certainly a legitimate perception and one that is historically accurate. However, I am concerned that the development of telecommuting could be stunted or side-tracked if it is generally seen only as an option for workers like writers and systems programmers.

Off-the-shelf hardware and software now make it possible for people to work toward a common purpose without congregating in a specific place at an appointed time. They also eliminate the need to follow the traditional divisions of labor.

The possible applications of this expanded concept are almost limitless. They are constrained only by considerations of cost-effectiveness and human factors. New enterprises, in particular, should examine their planned operations in light of this concept. By avoiding the old ways of doing business, they can save money on staff, taxes, work space, perquisites and so on, while they gain in flexibility, adaptability and productivity. For example, many sales and service operations can function on a dispersed basis, with very light overhead and little or no paperwork. A business designed from the outset to operate on the basis of telecommuting can be readily expanded or contracted and can have ready access to short-term expertise or supplemental support.

Brian Le Bert-Francis
Falls Church, Va.

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VIEWPOINT

PCjr's second Halloween

LECHT ON SCIENCE
Charles P. Lecht

PCjr's mother, Personal Computer — affectionately known as Big Beulah — was dressing him for his second Halloween party. Memories of PCjr's first Halloween [CW, Nov. 14, 1983] caused her mood to be one of wary pleasure in performing the task at hand.

Last year she had dressed him as a big, blue meat-eating peanut who stood out among the evening's ghosts of what had been and the ghosts of what might have been by virtue of his yet-to-be quality. It scared the living daylights out of just about everyone in the low-end desktop computer manufacturing community. It turned them into a restless hoard that shrieked, howled and even committed suicide at the very mention that PCjr might be in the peanut — forget his actual materialization. And when he did materialize on All Souls' Day in 1983, many of the community just plain vanished.

PCjr had hardly said "Boo!" It sent a tremor into Silicon Valley's famous San Andreas fault of sufficient strength that many buildings were rattled and their inhabitants hastily abandoned them, leaving "to-let" signs with box number addresses as the only sign that anyone had ever been there. That's why Big Beulah was wary and ultimately why she decided to dress PCjr in a less effective trick-or-treat costume this year and to host the party to prevent it from becoming too unruly.

This year he would go as a cute Charlie Chaplin and she as a cherub to disguise her ever-growing size. They called her Big Beulah in the same sense that Robin Hood did his friend "Little John," but that's another story.

This year the party would be celebrated mostly with relatives — Personal Computer AT, Personal Computer XT, Personal Computer XT/370, Personal Computer AT/370, 3270 Personal Computer and a variety of other descendants. Big Beulah expected that whoever else attended this year's festivities would behave with greater decorum than did last year's hoard. Their hooting and hollering, masks and noisemakers weren't so bad; it was the moaning and groaning that no one liked, but then these spirits had long since gone from the scene.

Victims invited

Some newcomers like AT&T's 3B family from Unix, New Jersey as well as their friends were invited, but only after promising to behave like victims for the other guests should things get dull. Gate-crashers and others falsifying invitations were amply warned to keep away; those persisting were diverted to a local graveyard where other festivities were held, including a screening of *The Univited* on a tombstone, assault by a group of lawyers with clubs and burial — alive.

PCjr had grown to become a respectable example of a young computer; Big Beulah had taken very good care of him. It hadn't been easy to do either. She reflected on how Wall Street speculators and industry analysts had caused her legal staff to haul her into the delivery room before she was ready to have PCjr and forced his premature birth. This required his being kept in an incubator for months before he could leave the factory with any hope of survival.

Weak start in life

Big Beulah could not be faulted if, in the rush to give birth to PCjr, he had arrived with a defect or two giving him a weak start in life. The fact that he survived the ordeal was in itself something in which she took pride. From the moment he emerged he was put on a rigorous program to extend his memory, improve his logic and endow him with thousands of new programs. Even surgery was employed; PCjr's Chiclet-size keyboard was severed at its cable and a new, less gummy one attached.

Talk about things Chaplinesque, the sound of this surgery, which produced a factory change along with an on-the-spot dealer exchange of the thousands of keyboards already distributed, gave PCjr's mother ample reason for greater pride; it was carried off as an almost silent movie. Now he was as healthy as a one-year-old computer could be expected to be. Measured in human years, he was a strapping 15-year-old and full of mischief.

Looking in the mirror he accepted his new mustachioed countenance as might any kid imagining himself incognito and ready to trick-or-treat. Popping on his hat and awkwardly holding his cane, he made his way hand in hand with his mother to the Halloween party.

The party was to be held in a boardroom in a building between the Trinity churchyard and that of St. Pauls near Wall Street on the island of Manhattan in New York. The room was decorated with orange and black crepe paper leading to pumpkins all over the place. Their insides were torn out and their outsides carved into the hideously grinning faces of a wasted desktop/home computer community portrayed as witches and goblins. The candlelight that flickered from within was all that gave memory to the fact that they were once in the land of the living. All attending agreed that the room had been converted into an authentic replica of the bridge on which the Headless Horseman had killed Ichabod Crane in the legend of Sleepy Hollow, which takes place along the Hudson River in a valley by the same name. Some thought the decorations to be a statement by Big Beulah to the New York financial community of the supremacy of the Hudson Valley over the Silicon Valley. Festooned lanterns and gurgling punch bowls completed the decor. This was the kind of place in which Halloween parties were supposed to take place.

As Big Beulah and Charlie passed the many buildings for which the Wall Street area is so well known, he begged to be allowed to do a bit of trick-or-treating before they closed for the day. "What about Merrill Lynch Pierce Fenner & Smith, Inc.?" he shouted. Big Beulah smiled.

Not wishing to kill PCjr's enthusiasm so early in the evening she said, "I don't think they scare too

See **PARTY** page 60

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

Is your DP staff better off now than four years ago?

HUMAN CONNECTION
Jack Stone

The issue of well-being of our citizenry is certainly creating a stir in the political arena and may, with some liberal extensions, have some interesting byplay in the data processing environment.

I can't help taking a lead from this issue and wonder how many DP managers have, as of late, allocated a full five minutes of their overcrowded schedules to ask themselves such questions as:

- What is our personnel environment like today?
- Have our working conditions improved over time?
- Are we increasing salaries and benefits reasonably in the light of competition, and are we distributing raises equitably?
- Can we say that we are treating our staff in an evenhanded way?
- Do we force projects down throats or do we plan them properly?
- Are we willing to commit the right levels of resources to projects and provide the computerized tools needed to maximize the productivity of the staff?
- Is upgrade training provided to the old-timers?
- In brief, are our people better off today than they were four years ago?

> *The programming staff is way ahead today in one sense, namely that the typical center manager has figured out, at long last, the fundamental strategy for its care and feeding.*

The managers will claim something like "things have never been so good — after all, there's a terminal in every cubbyhole." And the DP staff will allege that there's too much work for too little pay. The truth, as in all such matters, lies somewhere in between. Let me take a crack at where I think most centers are with respect to several points.

- The programming staff is way ahead today in one sense, namely that the typical center manager has figured out, at long last, the fundamental strategy for its care and feeding: Give them a challenging project, that is, one which advances their knowledge, but is not so challenging that the knowledge gained will increase the DP staff's market value beyond a level that the manager can pay. Provide individual offices with private workstations so that the DP staff can get their jobs done during normal business hours and not have to traipse around all night long in out-of-control situations. Provide opportunities for individual projects, in recognition that DP personnel have a strong sense of independent professionalism.
- On the other side of the coin, the programming staff is way behind because work pressures force managers to deviate from the above strategy and these pressures have become worse, not better over the years.

There is a plethora of challenging projects — any one of which will enhance the DP worker's market value.

The problem is that they tend to bunch up and pile on the programmers' shoulders. Then pressures build to finish tasks well in advance of reasonable targets and the programmers respond, but they are unhappy having to do work in a half-baked way.

Individual offices and private workstations are assigned, but too often are abandoned when staff growth requires doubling up of space and facilities. Except for maintenance work, independent projects have become virtually extinct because the newest systems are so complex that they must be handled on a team basis. Overall, I submit that programmers are better off today than four years ago because most managers recognize their problems, but I'll wager that nine out of 10 programmers will say they are worse off because managers haven't resolved their problems. ‡

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

PARTY

from page 59

easily these days, but if you want to try, go right ahead."

PCjr made his way into the crowded lobby yelling, "Trick or Treat!" To his amazement everyone there was dressed as Charlie Chaplin, and he exited without one jelly bean.

The folks at Paine Webber, Inc. were still dressing for the festivities. Here, too, they were dressing in Chaplin costumes, but they were only half-dressed and there weren't enough disguises to go around. With Cheshire-cat-like grins they poured whatever candy they had around into PCjr's sack so that he had to pull it along the ground to his mother. "Thank you, Paine Webber," he shouted and he took his mother's hand to head for another spot to try his luck — Smith Barney Harris Upham Co. He left in tears as an old Englishman admonished him to get his treats the old-fashioned way — by earning them.

On the the way to the party PCjr couldn't help but notice that just about everyone on Wall Street had donned a Chaplin suit. He wondered if they were all going to the same party and if he'd be able to recognize his relatives when he got there.

To his horror, he couldn't. "Courage," his mother said, "Look, there are some others dressed like Apples."

"Throw them in the punch and let's bob for them," someone said."

"Hold your horses," someone else cautioned, "without them, the party will be a look-alike bore."

"Might even be raided," someone offered, "Department of Justice agents in Charlie Chaplin costumes are known to be in the area."

As the witching hour arrived, the entire group — PCjr and his relatives, the invited look-alikes, the Apples and the others — started to multiply as fast as they could until the room was filled wall to wall and floor to ceiling.

Its doors flew open and the expanding number of inhabitants flowed through them as from a tube. The now flowing but solid stream of Chaplins punctuated by Apples made its way into the walled streets of Lower Manhattan. It flowed up the stairs of the New York Stock Exchange and onto the floor, whereupon it filled the entire edifice and threatened to burst its seams.

The party's over

"Enough is enough," Big Beulah shouted. "This party is getting too rough." The place was dangerously overcrowded, and she feared its collapse. "Party's over," she announced. "Stop cloning around."

The 3Bs headed for the bridges and tunnels to New Jersey where they had planned a Halloween party of their own — sponsored by the old Ma Bell crowd. They were a rowdy group and tired of their role as victims. Under their Chaplin outfits they wore T-shirts on which was printed "Judge Green's Jolly Giants: Unix, N.J."

The Apples rolled on their merry way headed for local schools to be given away with free lunches. The Commodores went to the new Seaport on Manhattan's East River for a drink. The others went to St. Paul's Cathederal to pray.

"Humdinger Halloween party," PCjr said as he went home with his mother. Big Beulah wasn't all that happy with it. True, the 3Bs were new, but they had some nerve donning Chaplin costumes. Hiding her dismay she put PCjr to bed reminding him that Christmas was just around the corner and asking him what he'd like this year. "An Apple," he shouted gleefully and for a moment she wondered why she'd ever had children.

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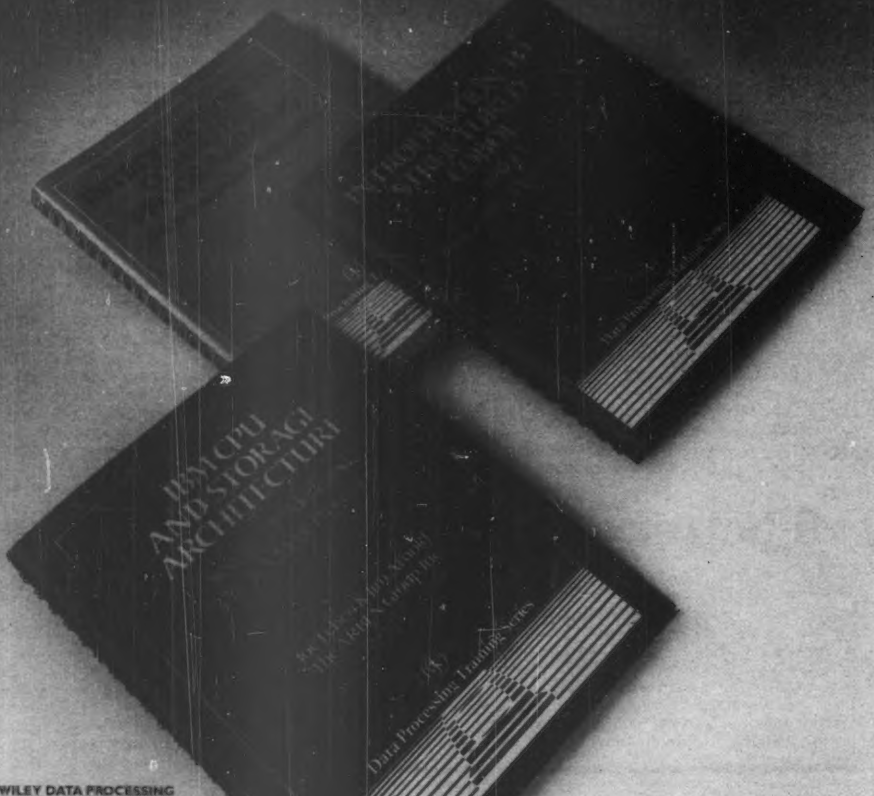
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SOFTWARE & SERVICES

User: Mapper eases data administration woes

Redesigned version promises to accelerate execution, expand memory

By Daniel L. Nevels
Special to CW‡

Sperry Corp.'s Mapper is a software product that displays reports on-line to a CRT. Reports can be manipulated by functions within Mapper so they can be sorted, totaled or searched to refine reports.

Mapper is a unique product because it not only allows simple displaying of reports but also has higher software to turn the data base file or report into a full-blown on-line transaction system.

The major benefit is the ability to create a data base within Mapper in a short period of time. This time can range from an hour to a few weeks.

The data base in Mapper follows a unique design in that it resembles a report structure. Because users are familiar with reports, the Mapper system makes the user's approach to the system easy to comprehend.

Think for a moment about the design of the data base. Bring to mind two average office filing cabinets, each with four drawers. Each of the eight drawers has numerous folders. Each folder has sheets of paper full of information. For the Mapper switch, consider that these filing cabinets are called a model. The drawers in the cabinet are called types. The folders are called Report Identifier (RID). This is how Mapper defines the data base structure.

> *There are legitimate criticisms that Mapper devours system resources. This is often because management decides to put . . . everything on Mapper.*

There are more than 200 modes in a basic Mapper system that can be accessed by the user. There are up to eight types per mode. There can be up to 5,000 reports in each type. Each report can have from 500 to 1,000 lines of data.

Because Mapper executes in real time, the system is comparable to other on-line support systems. There are some major drawbacks to the system, which will be discussed below. However, for the most part, the system is self-supporting because it does not rely on other programs to function.

A major feature incorporated in Mapper is the ability to write a run. The run is usually a set of job control language-type instructions that perform a group of manual functions to prepare or produce a report.

There are three types of Mapper shops: The first is a manual function environment, in which manual functions are used exclusively by the user to manipulate the data. A traditional environment is the second type, in which 50% manual functions and 50% Mapper runs are used. The third is a Mapper transactional environment, in which Mapper runs are used exclusively, and little or no manual functions are utilized.

See **MAPPER** page 68

Nevels is the Mapper coordinator at Goudchaux, a department store chain based in Baton Rouge, La. He supports about 30 Mapper users.

■ Eureka Software Corp. has announced an on-line prototyping tool for IBM CICS environments/**62**

INSIDE

PIE family features multiple windowing for IBM's MVS/TSO

TUSTIN, Calif. — Technologic Software Concepts, Inc. has announced the Productivity Integrated Environment (PIE) family of software products, said to enhance IBM's TSO to allow multiple windowing on IBM 3270 terminals under IBM's MVS/TSO operating environment.

Using PIE, developers can maintain up to 12 concurrent TSO sessions in a single address space. Sessions can be viewed and edited while other sessions are executing, a spokesman said. A single keystroke can be used to switch to any tool or application.

PIE consists of the Session, Network Access, File Access and View packages. The full screen windows reportedly let programmers make instant changes to the source code while reviewing a program's test results, even if the program is an IBM CICS or IMS transaction.

PIE Network Access is an option that allows any TSO sessions to be connected to any other on-line system on an IBM mainframe, including IBM's CICS, TSO and IMS/DC, the vendor said.

PIE File Access implements hierarchically organized directories for data sets and allows them to be accessed without keying, according to the company. Users can edit, browse or print any data set by selecting the name from a full screen display.

The View option is said to be similar to IBM's Topview. It provides a notepad facility for 3270 screens and allows any screen to be copied into the notepad and eventually to disk.

All PIE products are available for trial on any MVS operating system. PIE Session prices range from $4,750 for a IBM 370/158 mainframe to $19,750 for a IBM 3084 mainframe. The Network Access option costs an additional 80% of the PIE Session price. File Access is priced at 40% of the PIE Session cost. View costs $3,750 for an IBM 3084. For a 30 series mainframe installation, the entire series costs about $40,000, the spokesman said.

Technological Software Products is at Suite 216, 150 Camino Real, Tustin, Calif. 92680.

IBM unleashes OA enhancements for its word processors, SSP, micros

As part of its recent series of office automation software announcements [CW, Oct. 29], IBM beefed up its Displaywrite series of word processing packages, added features to its System/36 operating environment and included new products that allow IBM Personal Computers to emulate IBM 5250 workstations.

■ Displaywrite 3 is a new release of IBM's text processing program for the Personal Computer series. It provides all the functions of Displaywrite 2 Version 1.1 and adds the following features: automatic footnoting, automatic outline/section numbering, spelling verification, background or foreground printing, interchange with other IBM word processing programs and cursor draw. The package will be available in July for $349.

■ Displaywrite/36 is a text editor that offers interfaces and functions similar to the IBM Displaywriter. Advanced functions include text and data merge capabilities, large document support, automatic hyphenation, spelling verification, synonyms, repetitive letters, label printing and report writing. It supports IBM's Document Content Architecture for both revisable and final formats. Seven language dictionaries are also available, priced at $120 each. Displaywrite/36 will cost $2,000 when shipped in July.

■ System/36 announcements led off with a version of the SSP operating system. Release 3.0 includes distributed data management capabilities that allow a System/36 application to access files stored on another System/36.

Supports System 36

SSP office support provides basic functions for the new office programs for the System/36. Advanced program-to-program communications basic conversation support has been added. The communications and systems management features have also been expanded to support the sending of alerts to an IBM 370 host under IBM's System Network Architecture (SNA).

Enhancements have been added to the Distributed System Node Executive, and the System/36 now supports the IBM 5219 and 4214 Model 2 printers. Other features include diskette data compression and a data dictionary facility. A one-time charge of $4,000 was set for its SSP with the distributed data management feature available for an additional charge of $2,500.

■ Query/36 is a program that can be used by office workers to retrieve information by a variety of selection criteria. The menu-driven program offers fast path definitions; cursor-sensitive help and list processing. Query options include create, save, copy, delete and revise functions. A variety of record selection and data options are offered. Query/36 carries a one-time license fee of $950.

■ PC Support/36 provides information exchange and resource sharing between an IBM Personal Computer and the System/36. Programs run on both systems. The product is capable of transferring data files between the two systems. One-way transfers from the System/36 to the Personal Computer are available for library source and procedure members; and for character, packed decimal, zoned decimal and binary numeric data.

Data transfer definitions can be saved. Personal Computer print output can be directed to a System/36 printer, and a Personal Computer user can access up to eight virtual disks on the host at the same time. A one-time charge of $700 is required.

■ An IBM 5250 Emulation package was also announced, consisting of an emulator card and software that allows a Personal Computer to emulate an IBM 5250 display station connected to a System/34, 36 or 38.

The Personal Computer can emulate an IBM 5291 or 5292-1 workstation, and its printer can emulate an IBM 5256 matrix printer or 5219 printer. The package allows concurrent access to the Personal Computer fixed disk while the enhanced 5250 emulation program is active. Two host sessions and one Personal Computer session can be established. Predefined and user-defined keyboard configurations are available. Virtual diskette support is included. The adapter card costs $995, the cable costs $120 and the software costs $195.

IBM's National Accounts Division is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

VTAM

NETSPY™ is a Network Performance Monitor that runs under MVS and VTAM version 2; it allows users to monitor all or selected VTAM applications.

NETSPY provides response time and traffic statistics per application and per terminal. It provides three levels of response time: last, worst and average.

For applications using the SNA definite response mode protocol, such as most TP subsystems including TSO and IDMS, NETSPY provides the network delays necessary for each transaction.

NETSPY displays its monitoring of response times and traffic statistics from a NCCF 3270 screen or a TSO command processor. NETSPY makes no modifications to either the MVS or VTAM code nor is it release dependent.

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SOFTWARE & SERVICES

Eureka adds prototype tool

NEWPORT BEACH, Calif. — Eureka Software Corp. has announced an on-line prototyping tool for IBM's CICS. Prototyp/CICS is said to eliminate the user's need to know IBM's JCL or CICS or other operating system procedures.

The product includes a structured, high-level procedural language and a set of interactive program development tools, accessible by programmed function keys or commands. Models can be easily modified, a spokesman said. Data typing and data conversion are eliminated. High-level commands are included for data validation, editing and formatting. Customized instructions can also be added.

Eureka said any type of data base can be modeled with Prototyp/CICS. Data files can be quickly defined and loaded with test data. Screen development tools allow for definition and testing of screen panels, the spokesman said.

The system maintains an on-line data dictionary containing definitions of screens, files, data fields and records and code modules. Elements are independent and can be cut and pasted interactively.

Prototype/CICS is available for IBM's OS/VS1 or MVS operating systems at a price of $29,950.

Eureka is located at Suite 550, 3857 Birch St., Newport Beach, Calif. 92660.

SYSTEMS SOFTWARE

GLOBAL SOFTWARE, INC.

Globe-Link/Real Time

Global Software, Inc. has announced a microcomputer-to-mainframe link software package for data transfer between an IBM Personal Computer, Personal Computer XT or Personal Computer AT and any IBM 4300 series or compatible host computer.

The Personal Computer, running under IBM's PC-DOS or Microsoft Corp.'s MS-DOS 1.1 or 2.0, must have Digital Communications Associates, Inc.'s Irma terminal emulator board with coaxial cable connection to an IBM 3274 or 3276 control unit or an asynchronous communications card and modem with a switched (dial) telephone line.

The mainframe host must have IBM's CICS/VS 1.4 or above with standard asynchronous or IBM 3270 protocols, IBM's DOS/VSE, OS/VSI or MVS operating systems, IBM's Vsam access method support and Cobol DOS/VSE Release 3 or OS/VS Cobol.

Globe-Link/Real Time allows financial users to download and upload Vsam files between the central host system and the microcomputer without special programming, the company said. Users then can structure custom-designed financial models with the aid of Lotus Development Corp.'s 1-2-3, Software Arts, Inc.'s Visicalc and other spreadsheet packages.

The package costs $10,000.

Global Software, P.O. Box 51248, 1009 Spring Forest Road, Raleigh, N.C. 27609.

THE TRAVELERS CORP.

Net-Pic

The Travelers Corp. has announced a network monitoring system for any computer running under IBM's MVS operating system.

Net-Pic monitors the status of a communications network and provides on-line color displays of all elements of the network. When the system detects trouble, a warning signal sounds, and elements of the network picture change color to identify the problem area. Both computers and communications lines are depicted in the picture.

Net-Pic's base price is $50,000.

The Travelers, One Tower Square; Hartford, Conn. 06115.

See **AIDS** page 64

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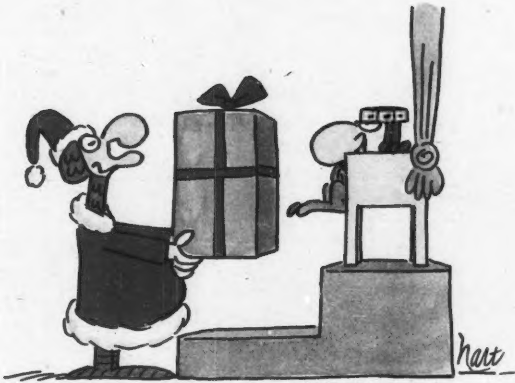

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SOFTWARE RESEARCH CORP.
RJE QA

Software Research Corp. has introduced a remote job entry (RJE) quality assurance package that allows computer hardware manufacturers to test RJE workstations for IBM compatibility.

RJE QA is compatible with both IBM's JES and Power/VSE spooling systems, the vendor said. The package reportedly supports bisynchronous and IBM's Systems Network Architecture protocols.

The product is said to test product compatibility for IBM RJE protocols, including the 1130, 2780, 3780, 3770, 3741, Hasp and the 360/20.

The product costs $15,000 and is available for lease at $1,500/mo, $2,000/mo for less than two months.

Software Research, One Natick Executive Park, Natick, Mass. 01760.

VERSATEC, INC.
Universal Versaplot 9

Versatec, Inc. has announced Universal Versaplot 9 software that generates plots on Versatec monochrome electrostatic plotters using any operating system on a 32-bit processor. Universal Versaplot 9 — coded to Ansi Fortran IV standards, requires a Fortran IV compiler, random-access disk and sufficient disk space to store plot descriptions in X-Y coordinate pair data.

The package is call-compatible with pen plotter programs and offers user-definable clipping window, plotting viewport and pen attributes. Universal Versaplot 9 outputs six Versatec data standard formats.

The package is available on Ascii or Ebcdic nine-track tape (800 or 1,600 bit/in.) for $2,000. The package includes source code and documentation, graphics programming manuals and an operation design and integration manual.

Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051.

APPLICATION PACKAGES

CALMA CO.
DDM/CMM

Calma Co., has announced a computer-aided testing software package for computer-integrated manufacturing environments.

Design Drafting and Manufacturing/coordinate measuring machine (DDM/CMM) is said to work in conjunction with the company's DDM core system software for mechanical product development. It is said to maximize the utility of testing tools such as CMMs. The product runs on Calma's Digital Equipment Corp. VAX-11-based and Apollo Computer, Inc.-based turnkey systems.

The DDM/CMM interface is said to enable the user to generate inspection routines, display inspection tool paths and process command files directly from a DDM model data base. DDM/CMM is implemented through a full three-dimensional graphics system. The software release reportedly allows inspection of points existing in the DDM model, generation of surface inspection point arrays, interactive generation of inspection paths and automatic generation of tool paths.

Inspection data can be returned to the model data base either through the addition of inspected points or through generation of surfaces through arrayed inspection points, the company said.

The system costs $20,000 and will be available in early 1985.

Calma, 2901 Tasman Drive, Santa Clara, Calif. 95050.

CHASE DECISION SYSTEMS
Xsim Version 16B

Chase Decision Systems has announced Version 16B of Xsim, its decision support applications software for IBM mainframes and compatibles running IBM's VM operating system.

Included in this release are protected links to microcomputer software packages, including Lotus Development Corp.'s 1-2-3 and Symphony and Microsoft Corp.'s Multiplan; an enhanced version of Xsim's Worksheet mainframe spreadsheet facility; and a new bulk data loading capability.

An Xsim interface allows users to create menus and forms via the IBM Display Management System for use with the IBM 3270 family of terminals. Also added are graphics support for Hewlett-Packard Co.'s 7470A and 7475A plotters, the ability to exchange data with other software and a terminal emulator that automatically dials up and connects to a host computer.

The base price of Xsim Version 16B is $50,000. Options are available.

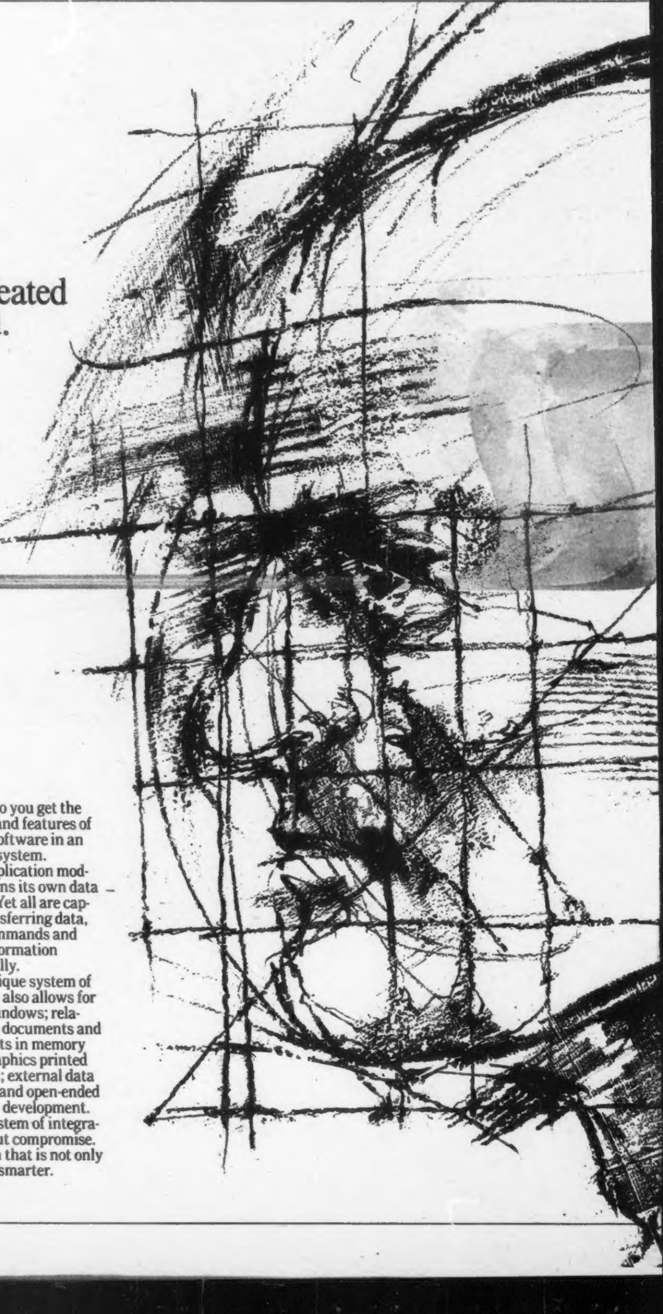
Chase Decision Systems, 1000 Massachusetts Ave., Cambridge, Mass. 02138.

XEROX COMPUTER SERVICES
Xerox Turnkey System upgrade; IBM Personal Computer products

Xerox Computer Services has announced that it is now offering its Xerox/IBM 4300 Turnkey System with an IBM Model 4331-J2 mainframe instead of the IBM Model 4321. The price of the system will remain at $250,000, according to the company.

The company also announced three products involving the IBM Personal Computer. An IBM Personal Computer, Personal Computer XT or Personal Computer AT — which Xerox is marketing through an agreement with IBM — can be used as a workstation for the Xerox/IBM 4300 Turnkey System.

A file transfer package, PC Link,



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allows uploading and downloading of the Xerox Manufacturing System data base on the 4300 Turnkey System, a spokesman said. The package integrates with software packages such as Lotus Development Corp.'s 1-2-3, Ashton-Tate's Dbase II and Microsoft Corp.'s Multiplan on the 4300 Turnkey System.

The Control/PC package allows IBM Personal Computer users to use Xerox's Control Information Center tool on the 4300 Turnkey System.

PC Link is priced at less than $1,500. Control/PC is priced at $495 (if purchased with an IBM Personal Computer, Personal Computer XT or Personal Computer AT, which Xerox is selling at the current established IBM price), and it will be available in January.

Xerox also announced its Management Support Systems package. The system is designed to enhance Xerox Business Management System applications such as general ledger, accounts payable, accounts receivable and payroll.

The six new products are Vice President (VP), Accounting Manager, Knowledge Worker, Control, Control/PC and Control Strategist. Each module can be purchased separately.

VP and Knowledge Worker are priced at $3,000 each; Accounting Manager costs $10,000; Control and Control Strategist cost $40,000 each; and Control/PC costs $1,000 (as a stand-alone package). Accounting Manager, Knowledge Worker and Control/PC will be available in January 1985; the other modules are available immediately.

Xerox Computer Services, 5310 Beethoven St., Los Angeles, Calif. 90066.

INVESTMENT SYSTEMS CO.
Portfolio Accounting System

Investment Systems Co., has announced a software accounting package that is said to provide accounting functions needed for portfolio record keeping.

The Portfolio Accounting System is designed to run on the IBM System/34 and System/36. The product is menu-driven and reportedly provides on-line data entry with edit checking. The software also includes an on-line inquiry function.

System modules consist of Base System, optional Interest Processing and Automatic Corporate Actions. Modules include documentation and source code. Price of the Base System is $25,000.

Investment Systems, 50 Congress St., Boston, Mass. 02100.

GLOBAL TURNKEY SYSTEMS
Distribu-Data/Plus

Global Turnkey Systems has introduced the Distribu-Data/Plus package, an on-line, interactive, integrated system for finished goods distribution applications.

The system runs as a stand-alone product on any mainframe computer that supports IBM's DOS/VSE or MVS operating systems or as part of a turnkey system using IBM's 4300 series computer. It is written in Cobol and uses IBM Vsam file structures.

The system is composed of five standard subsystems: order processing and billing, purchasing, inventory management and control, sales analysis and accounts receivable.

Optional general ledger and accounts payable systems are also available.

Some of the features of the package are a report writer module, a library and an editor.

The stand-alone Distribu-Data/Plus package is priced at $200,000.

Global Turnkey Systems, Four North St., Waldwick, N.J. 07463.

GUARDIAN AUTOMATED SYSTEMS, INC.
Unilaw for AT&T's 3B2, 3B5 series

Guardian Automated Systems, Inc. has announced that its legal, data base management and general accounting software is available for AT&T's 3B2 and 3B5 series of computers running under the AT&T Unix operating system.

The Unilaw package includes software for time and billing, trust accounting, accounts payable, management reporting, electronic filing, litigation support, docket control and appointment scheduling, according to the company.

The price of Unilaw for the AT&T 3B2 and 3B5 series is $9,000.

Guardian Automated Systems, Suite 600, Liberty Bank Building, 420 Main St., Buffalo, N.Y. 14202.

See **PACKAGE** page 66

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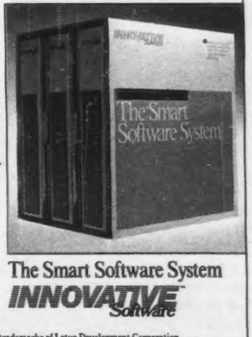
Smart Software is currently available for the IBM PC, IBM PC/XT, the new IBM PC/AT and IBM compatibles.



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*Lotus 1-2-3, WordStar and dBase II are registered trademarks of Lotus Development Corporation, MicroPro International Corporation, and Ashton-Tate, respectively. In Kansas, call (913) 383-1089.

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PACKAGE

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SUMMAGRAPHICS CORP.

Summadraft 8.0

Summagraphics Corp. has released a version of its architectural software package, Summadraft. The package runs on Summadraft's Icon computer-aided drafting systems running under Data General Corp.'s DG/Rdos operating system. The system supports California Computer Products, Inc.'s 1070 series and Hewlett-Packard Co.'s 7580 and 7585 plotters.

Summadraft 8.0 includes a wall function to create and modify multiple-line walls. An event mode allows coordinate data to be sent to Summadraft only when there has been a change in the data. The ability to modify elements within a frame has been implemented and the data flow method for transferring data to a plotter has been changed for faster transfer.

The price of Summadraft 8.0 as an update is $1,000. Bundled with the Icon computer, software, graphics CRT and digitizer, the package costs $49,500.

Summagraphics, 777 State St. Ext., Fairfield, Conn. 06430.

AUTO-TROL TECHNOLOGY CORP.

Numerical Control

Auto-Trol Technology Corp. has announced enhancements to its Numerical Control (NC) software system for manufacturing and machining applications.

The NC package works with Auto-Trol's Series 7000 Advanced Graphics Software and either Auto-Trol's Apollo Computer, Inc. 32-bit standalone Advanced Graphics Workstation or Auto-Trol's Digital Equipment Corp. VAX-11-based Advanced Raster Workstation systems under DEC's VMS operating system.

Features in the enhanced NC software include an antigouging algorithm, circular interpolation, cursor-guided surface milling, threading and grooving and improvements in the edit functions, according to the vendor.

The price of Numerical Control is $10,000 each for the first two workstations and $2,000 for each additional workstation, Auto-Trol Technology said.

Auto-Trol Technology, P.O. Box 33815, 12500 N. Washington St., Denver, Colo. 80233.

EXECUCOM SYSTEMS CORP.

IFPS/Insight

Execucom Systems Corp. has introduced IFPS/Insight, a decision support application designed for the insurance industry and based on Execucom's modeling and planning system, IFPS. The system resides as a module in the IFPS system. IFPS/Insight is a strategic planning and analysis system. Two versions are available — one for property and casualty insurers and one for life and health insurers.

The price of the IFPS/Insight system is $50,000 as a module to add to an existing IFPS system and $125,000 bundled with IFPS, IFPS/Optimum and five copies each of IFPS/Personal and Micro Insight.

Execucom Systems, 3410 Far West Blvd., Austin, Texas 78731.

CALMA CO.

Parametric Analysis Level

Calma Co. has announced a computer-aided design software package designed to work with the company's Design, Drafting and Manufacturing (DDM) core package and Design Analysis Language (DAL) for mechanical product development.

Parametric Analysis Level (PAL) works with Digital Equipment Corp.'s VAX-11 computers and Data General Corp.-based systems. According to the company, PAL can be used by a DDM operator who does not have DAL programming skills.

Cost of the package is $15,000, with a $2,500 installation and training fee. The product will be available in the first quarter of 1985.

Calma, 2901 Tasman Drive, Santa Clara, Calif. 95050.

MICRODATA CORP.

Results Bill of Material

Microdata Corp. has announced a bill of material software package designed for the distributor who repackages or assembles products before delivery to customers. The Results Bill of Material system runs on Microdata's 4700 and 9000 series computers under Microdata's Reality operating system.

The package supports bill of material processing, production work order processing and product cost accounting. The system interfaces with existing Results modules, and the files are set up to take advantage of Microdata's English query language for ad hoc inquiries and listing.

The price of the Results Bill of Material system is $4,000.

Microdata, 17481 Red Hill Ave., Irvine, Calif. 92714.

MANAGEMENT SCIENCE AMERICA, INC.

Applications for Burroughs Corp. mainframes

Management Science America, Inc. (MSA) and Burroughs Corp. have signed an agreement under which MSA will make several of its applications software packages available on Burroughs mainframes.

The agreement initially covers MSA's general ledger, payroll/personnel and accounts payable software. It will be extended to other products at a later date, MSA said.

MSA currently markets a batch version of its fixed asset accounting software for Burroughs mainframes. The new packages will be on-line

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with real-time updating and inquiries and will be supported by Burroughs and MSA.

The products will be available in the first quarter of 1985 at prices ranging from $50,000 to $250,000, depending on configuration.

MSA, 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

DATA BASE MANAGEMENT SYSTEMS

D&B COMPUTING SERVICES CO.
EZNomad

D&B Computing Services Co. has introduced a no-cost enhancement to Nomad2, the company's fourth-generation language and data base management system.

EZNomad gives end users access to all of Nomad2's standard features. Nomad2 runs on IBM mainframes using IBM's VM and MVS/TSO operating systems and on the IBM Personal Computer XT/370.

According to the company, EZNomad is screen-driven and requires no key words, system commands or knowledge of syntax for operation. End users follow a series of English language instructions, menus and point and pick screens, the vendor said.

EZNomad will be shipped in January, free of charge to Nomad2 licensees and will be a standard feature in future Nomad2 packages.

Nomad2 sells for $135,000.

D&B Computing Services, 187 Danbury Road, Wilton, Conn. 06897.

HAVERLY SYSTEMS, INC.
Omni LP Model

Haverly Systems, Inc. has announced that its modeling language, report writer and data management system is now available on Sperry Corp. mainframes, Digital Equipment Corp. VAX-11 superminicomputers, Prime Computer, Inc. superminis, Hewlett-Packard Co. HP 1000A minicomputers, as well as Data General Corp. Eclipse MV series, DG Generation desktop models and DEC desktop microcomputers.

Omni is said to provide a data-driven approach to the design and building of modeling applications. The software includes modules for processing, storing and updating input data, a language compiler and utilities for model management, the company said.

Omni is available for $30,000 or can be leased at $985/mo.

Haverly Systems, 78 Broadway, Denville, N.J. 07834.

SIR, INC.
DBMS for Unix systems

SIR, Inc. has announced that its data base management system is available on four AT&T Unix-based operating systems.

SIR/DBMS now operates with University of California at Berkeley Unix-based systems, including Digital Equipment Corp.'s VAX-11, Hewlett-Packard Co.'s HP 9000 Series 500 under HP's HP-UX operating system and Data General Corp.'s MV series, the company said. In addition, SIR/DBMS operates under Apollo Computer, Inc.'s AUX operating system.

According to the company, SIR/DBMS is designed for systems integrators and application developers. It is said to be useful in handling large volumes of data and supports relational, hierarchical and network views of data.

Included in the package is Sequel Plus, an expansion of IBM's SQL.

Base cost of the program is $6,000 for a single user on the HP 9000 series and $18,000 for multiple users. Prices range up to $60,000, depending on system and configuration.

SIR, Suite 400, 820 Davis St., Evanston, Ill. 60201.

BURROUGHS CORP.
Relational Technologies, Inc.'s Ingres for Burroughs XE 550

Relational Technology, Inc. (RTI) and Burroughs Corp. have signed an agreement that will make RTI's Ingres the only third-party relational data base management system (DBMS) available on the Burroughs XE 550 supermicrocomputer.

Burroughs will market and support Ingres on the XE 550, which is a Unix-based machine. Ingres offers forms-based programming tools that allow users to create, control and view data as tables. DBMS tools include forms definition, query/update, graphics report generation and application development. In addition, RTI's Ingres/NET networking system allows access to remote data bases located on any computer in a network connected by Digital Equipment Corp.'s Decnet.

The price of Ingres is $6,000 for a single application processor version and $9,000 for a multiple application processor version.

Burroughs, One Burroughs Place, Detroit, Mich. 48232.

REXCOM SYSTEMS CORP.
Rexcom Release 4.1

Rexcom Systems Corp. has announced a version of its Rexcom application development and data base management system that runs on Prime Computer, Inc. computers under the Primos operating system and on Harris Corp. computers under Harris' VOS operating system.

Features of this version include a conversational English query facility, external sequential file processing, concatenated key access, date conversions for all date formats and increased disk space conversation.

Licenses are priced from $5,600 to $34,000.

Rexcom Systems, Suite 320, 9575 Katy Freeway, Houston, Texas 77024.

CINCOM SYSTEMS, INC.
Ultra Interactive Data Base System Release 1.2

Cincom Systems, Inc. has announced a new version of its Ultra Interactive Data Base System, an inte-

Continued on page 68

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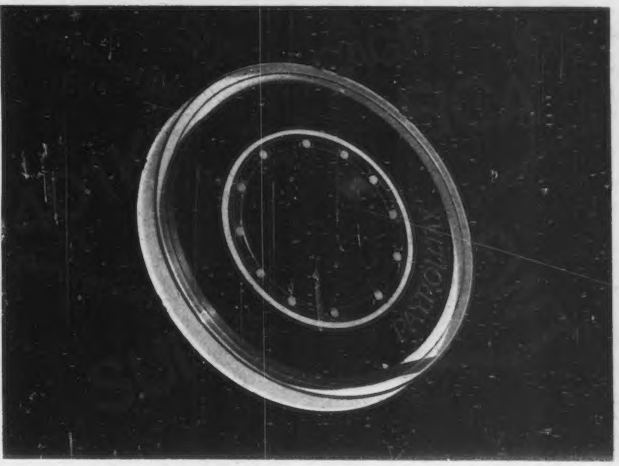

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SOFTWARE & SERVICES

Continued from page 67

grated relational data base management system for Digital Equipment Corp.'s VAX-11 computers under DEC's VMS operating system.

Features include an automatic data integrity control and logical user view (LUV) test facility functions, improved directory maintenance facilities and a Fortran preprocessor. Programmers can test the functionality of the LUV without writing an application program.

Release 1.2 of the Ultra Interactive Data Base System is available as a maintenance release at no additional charge to its users.

Cincom Systems, 2300 Montana Ave., Cincinnati, Ohio 45211.

D&B COMPUTING SERVICES CO.

Nomad2 options

D&B Computing Services Co. has unveiled three options for its Nomad2 data base management system.

The options include an IMS interface that runs on IBM machines under IBM's MVS operating system. The IMS interface is $6,000. Another option is an SQL/DS interface that runs on IBM equipment under IBM's VM/CMS. The SQL/DS interface is $10,000. A data dictionary that runs under IBM's VM/CMS and MVS/TSO operating environments is $5,000.

D&B Computing Services, 187 Danbury Road, Wilton, Conn. 06897.

UNITED SOFTWARE SYSTEMS AND SERVICES CORP.

Dimsum

United Software Systems and Services Corp. (U3S) has announced an on-line test system for IBM or compatible mainframes running IBM's OS/VS with either IBM's CICS or IMS/DC.

Direct IMS Update Manager (Dimsum) is an on-line data base management aid for IBM DL/1 programmers. It reportedly allows them to access directly, browse and modify any segment of a DL/1 data base, the company said.

The program requires 30K bytes of virtual storage and runs as an IMS program. Access to new data bases is controlled by the program specification block.

According to the company, Dimsum saves between 30% and 95% of DL/1 test data manipulation tasks.

The program is available immediately for a 30-day free trial. Initial license fee of Dimsum is $4,000. After the first year, annual usage fee is $500.

U3S, Suite 306, 9903 Santa Monica Blvd., Beverly Hills, Calif. 90212.

BEDFORD DATA SYSTEMS, INC.

Mapics Enhancement

Bedford Data Systems, Inc., has introduced a data base enhancement to IBM's Mapics manufacturing control system for the IBM System/38.

The Bedford Data Mapics Enhancement is said to allow IBM System/38 users to create and operate simultaneously up to 50 independent data bases that share Mapics software, but function separately. Performing simulations runs and program testing, it is said to allow users to access a training data base without damaging live data.

The product reportedly directs users to a preselected Mapics data base via sign-on identification codes. It also displays the names of accessed companies or data bases on all Mapics main menu screens. Price of the Mapics Enhancement is $2,500.

Bedford Data Systems, 19 Harvey Road, Bedford, N.H. 03102.

LANGUAGES

OREGON SOFTWARE, INC.

Pascal-2 compiler for VMS

Oregon Software, Inc. has announced a version of its Pascal-2 compiler for the Digital Equipment Corp. VMS operating system used on the DEC VAX-11 and Microvax computers.

According to a spokesman, other versions of the Pascal-2 compiler run on the DEC PDP-11 with DEC's RSX, micro RSX, RSTS/E, RT-11, AT&T Unix and S&H Computer Systems, Inc. TSX-Plus operating systems; the DEC Professional 350 with the RT-11 operating system; and the Motorola, Inc. 68000 microprocessor-based Unix systems.

With Pascal-2, programmers can develop a code on any of the DEC systems and port it to all other DEC systems.

According to Oregon Software, Pascal-2 conforms to the International Standards Organization's Pascal standard. All versions of the Pascal-2 compiler provide identical language features with the same interface for the operating system and hardware and the same set of language extensions.

Programmer development tools include a high-level interactive debugger, an execution profiler and other utilities to aid in coding and development.

License fees for Pascal-2 for VMS begin at $4,950.

Oregon Software, 6915 S.W. Macadam Ave., Portland, Ore. 97219.

MAPPER

from page 61

There are legitimate criticisms that Mapper devours system resources. This is often because management decides to put just about everything on Mapper. The problem usually shows up after Mapper has been on-line for three to six months. As the data base grows, so does the load on the operating system. Eventually, system performance can degrade substantially.

This can be avoided. There is a one-line summary in the Mapper users reference guide that sums it up: "The efficiency of the Mapper system depends on a data base of numerous but small reports." In other words, the longer the report, the longer it takes to search through it.

For example, suppose you have an inventory data base with the stock number as the index key. If the first two characters of the stock number represents the RID number of the item to be searched and the report to search is more than 500 lines, the search will take longer than if it searched a report of up to 100 lines. This is the only major system drawback.

Data base design for Mapper is very important. The more forethought you use, the better the overall response will be. Once the major obstacle of data base design is accomplished, the next step is presenting data to the user.

Besides the normal search, totalize and sort functions, Mapper includes even more powerful commands like calculate and match update. These functions can be executed manually one at a time or in a run. The run is similar to a program in the operating system.

When the data base is designed and installed, it can be tested by using manual functions within Mapper. When you decide which function to use, you can choose between using manual functions or putting them in a Mapper run.

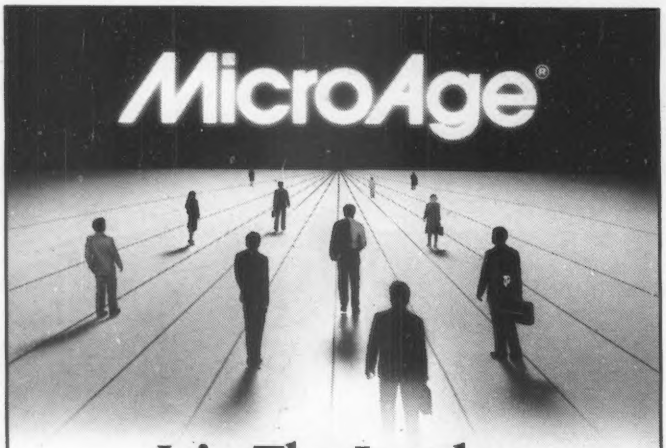
Getting the most out of Mapper

As you become more familiar with Mapper, you will find that it operates at optimum efficiency when you use manual functions. The reason is that the manual functions are not fast enough to impact the system. Runs, on the other hand, execute manual functions at internal memory speed. This causes the system to be impacted if the runs are not written properly.

Optimum usage comes when you can use as many manual functions as possible, then use Mapper runs for more complex data manipulations or display functions.

The next release of Mapper — Version 31 — promises to be a faster executing system. A number of the manual functions will optionally become memory-resident. This redesign of the system will show a marked increase in speed and memory.

The newer version will also have friendlier features. One that is especially outstanding is Make A Run Statement (Mars). Mars will capture the manual functions used to produce a report and, at your command, create the run for execution. It will then save the statements in an RID so you can execute it instead of using the manual functions.



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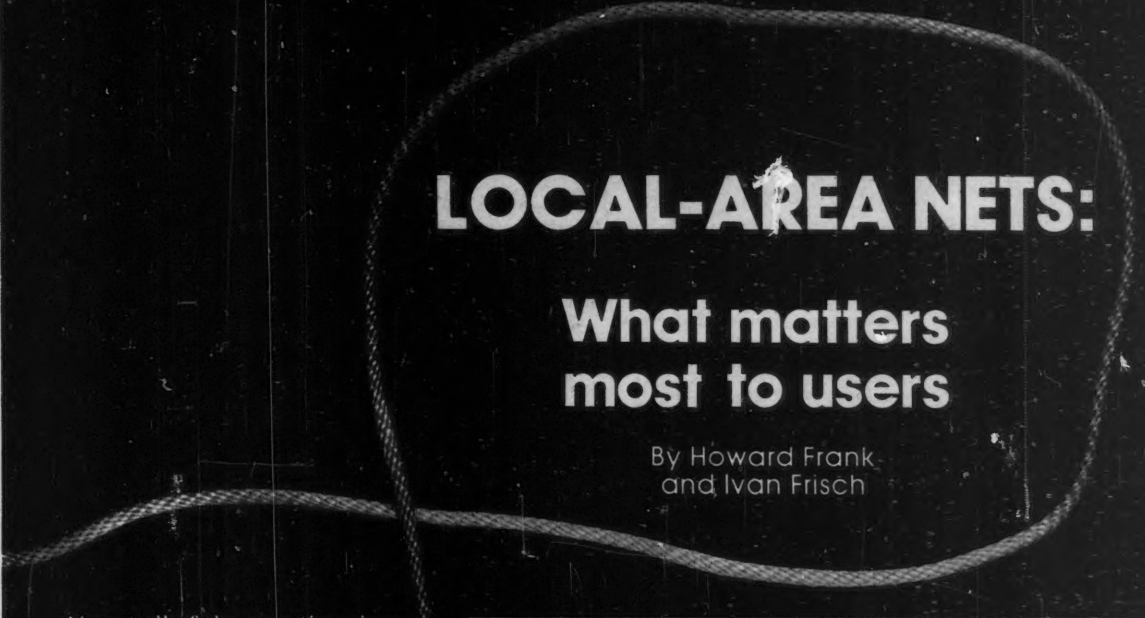


LOCAL-AREA NETS:

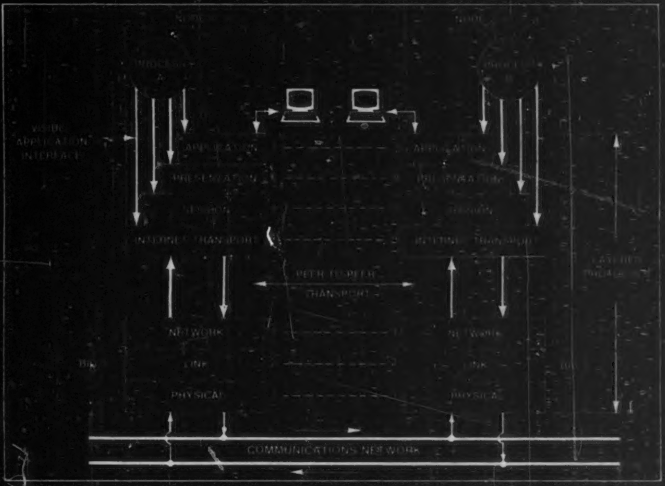
What matters most to users

By Howard Frank
and Ivan Frisch

Almost all of the attention given to local area networks in the last three years has focused on engineering issues. Yet these are the issues that matter least to the user, and they deserve little future attention by either users or systems designers.

The evolution of local-area networks is in many ways similar to the evolution of computers. In particular, early development efforts for computers focused on problems that were of interest to engineers as opposed to users. Early developments related to the machine language handling of accumulators and adders. It was only later that industry developed assembly languages, higher level user languages such as Algol and Fortran and applications systems such as text editors and word processors.

The International Standards Organization's (ISO) seven-layer protocol model (illustrated at right) was established to serve two purposes. The first was to enable standards to be developed for protocols at the different layers. The second was to partition functions (and their related software) to allow independent optimization and



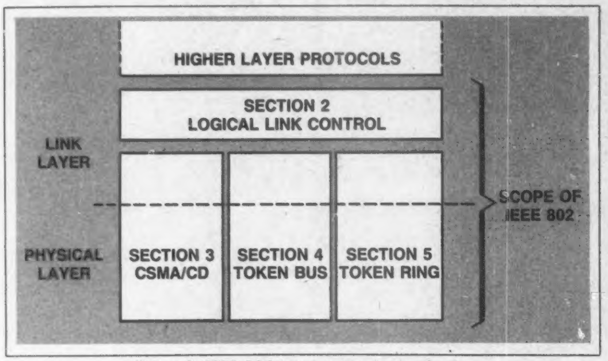


Figure 2. IEEE 802 local network standards

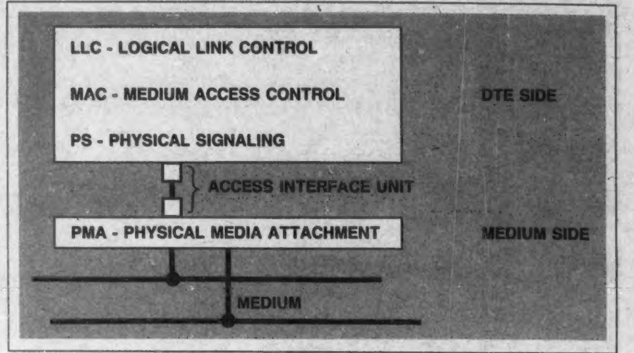

LLC - LOGICAL LINK CONTROL
MAC - MEDIUM ACCESS CONTROL
PS - PHYSICAL SIGNALING
DTE SIDE
ACCESS INTERFACE UNIT
PMA - PHYSICAL MEDIA ATTACHMENT
MEDIUM SIDE
MEDIUM

Figure 3. IEEE 802 standard media attachment unit

development of each layer.

However, the model also serves as an excellent vehicle to describe a communications/data processing system, its responsiveness to the user and areas of concentration for the designer. As we move toward the higher layers of the model, we deal with issues that correspond to the user's business. The nearer we move to the lower layers, the more we deal with issues of interest to the engineering designer of a system.

More significantly, we shall also find that as a result of historical necessity, almost all attention has been devoted to the bottom three layers. However, in the future, the more important layers near the top will be the ones that differentiate between alternative vendor approaches, determine the real cost of local-area networks and establish the utility of those networks within a user's intrafacility system.

ISO model

The physical layer of the ISO model deals with electrical issues: namely, establishing consistent and proper voltage levels, establishing end-to-end signal paths, ensuring that energy is traveling in the right direction and so on.

The next layer, the link layer, is concerned with information transmission over a single channel or link. Among its functions are acknowledgment of transmissions, error detection, sequencing and related operations.

The network layer is concerned with enabling simultaneous use of multiple links to increase information transmission performance. Among the issues addressed here are routing, flow control, end-to-end acknowledgments on the network for multilink paths and host-to-network interfaces.

The transport layer deals with end-to-end issues such as network addressing, establishment of virtual circuits and procedures for entering and departing from the network. It is only when we get beyond this layer that we start to discuss issues that are directly visible to the user. Thus, the session layer is concerned with establishing communications between given pairs of users and in starting, stopping and controlling communications.

At the presentation layer, we are concerned with the display, formatting and editing of inputs and outputs for a user. At the application layer, we are concerned with what the user is trying to do, namely, perform a business function. This task may be the generation of a ticket, a policy, a financial report or any number of other products.

In the past, almost all the attention and debate about local-area networks has been directed at layers one and two. Thus, the issues of token vs. carrier-sense multiple access with collision detection (CSMA/CD), bus vs. ring, coaxial cable vs. wire pair vs. fiber are all issues concerned with layers one and two.

In these areas, some of the light and much of the heat has been generated by the IEEE 802 Committee charged with developing local-area network standards. The committee's scope is illustrated in Figure 2 (taken

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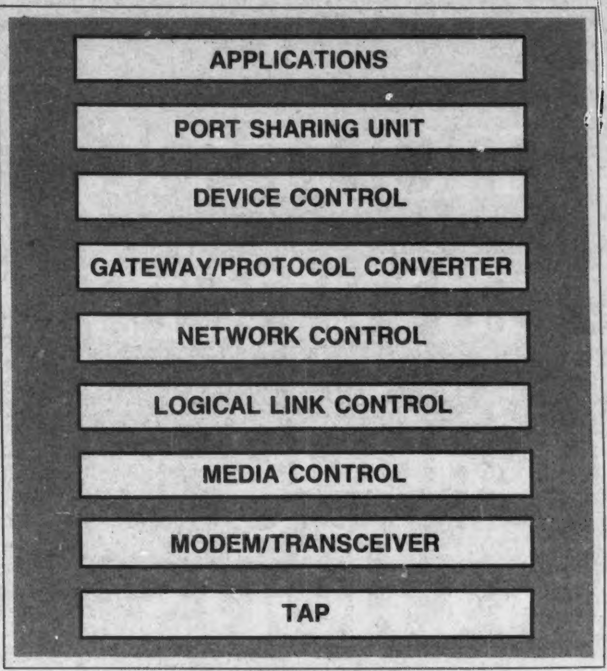

Figure 4. Hardware partitioning

from the IEEE 802 Network Standard). Simply stated, the scope of the IEEE 802 Committee consists of layers one and two of the ISO model.

Given this focus, a great deal has been accomplished in the last few years. A standard has been defined, adopted and modified by Subcommittee 802.3 for a CSMA/CD baseband bus. Furthermore, much progress has been made by some of the other subcommittees, and soon standards will be available for broadband and token systems. Unfortunately, the existence of the standard has led to relatively little standardization and much confusion.

The standard is concerned with a media attachment unit (MAU) as shown in Figure 3 (also taken from the IEEE standard). The standard indicates that if a vendor has a full media attachment unit, then the unit must provide a specified set of mandatory functions and must operate at one or more standard data rates. It must also have a standard access unit interface and one of the standard media interfaces.

If the device contains only the data terminal equipment (DTE) side of the access unit interface, then the access unit interface must be exposed, the device must operate at one or more of the standard data rates, it must have mandatory logical link control capabilities and it must use one of the standard media access control methods.

If the device does not have the access unit interface exposed, then all the above requirements must be met except for those relating to the access unit interface. Other variations are also possible. However, the specification does not indicate whether the various components illustrated in Figure 3 must be in stand-alone pieces of hardware or may be shared. For example, Figure 4 illustrates as separate boxes various devices that commonly appear as parts of or, sometimes, as stand-alone hardware components.

Figure 5 shows one hardware configuration associated with a leading vendor. This configuration has all of the IEEE 802 functions and meets the standard. However, the media attachment unit boundary is hidden

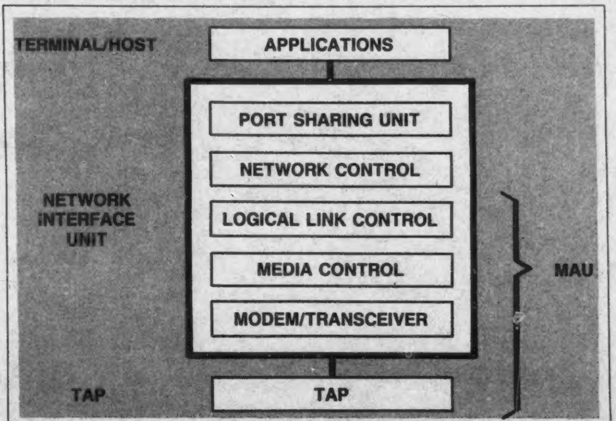

Figure 5. Example of hardware partitioning

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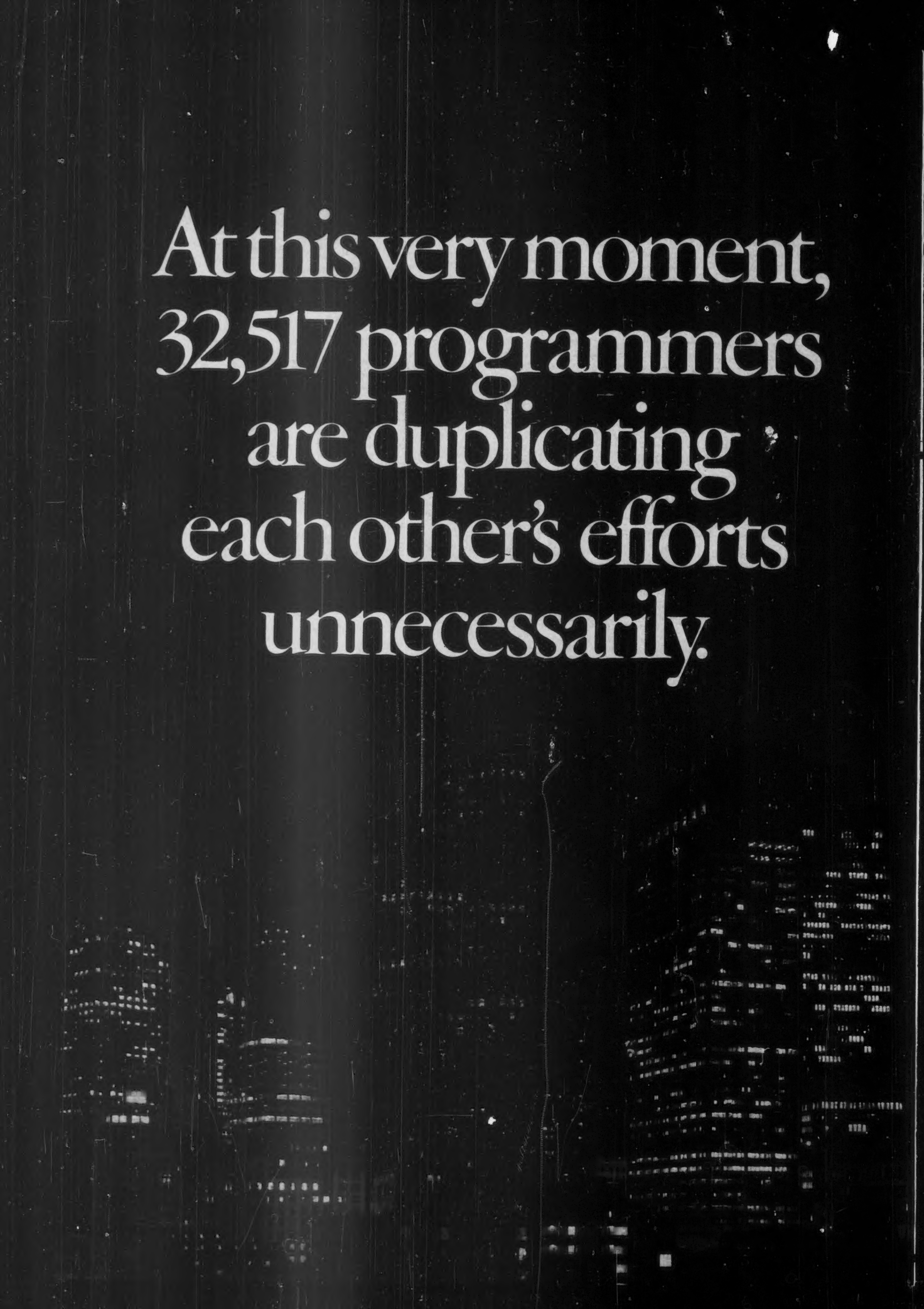
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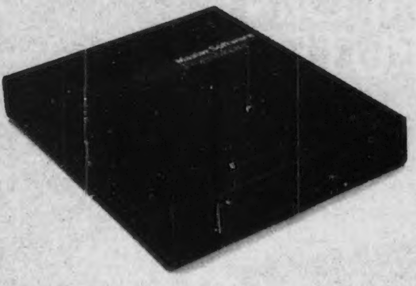

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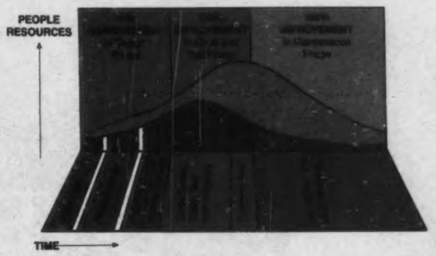

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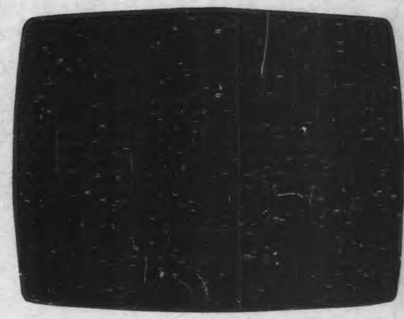

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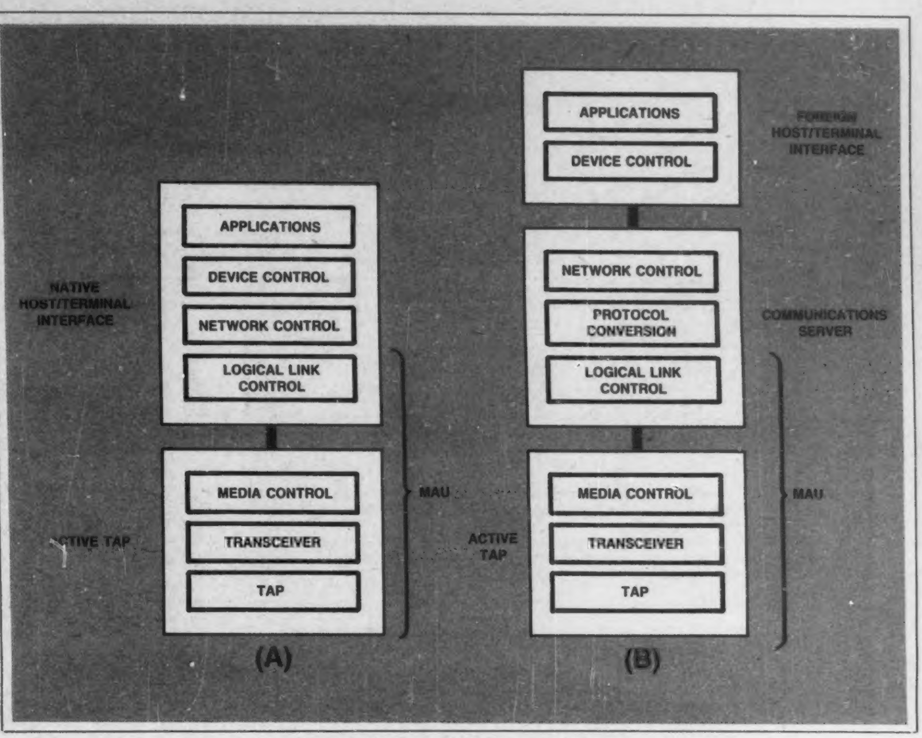


Figure 6. Example of hardware partitioning

within a hardware component called the network interface unit (or bus interface unit). Thus, the functional separation implied by the standard is invisible to the user.

Similarly, the offering of another leading vendor (as shown in Figure 6) also has the media access unit terminating within two different pieces of hardware called the active tap and the communications server, depending upon whether a native terminal is used for that vendor.

For the system shown in Figure 5, media control is separated from the tap. The tap is simply a passive physical connection. Alternatively, for the offering illustrated by Figure 6, media control (the access method) is located within an active tap and is separated from a device that is close to the terminal called the host terminal interface.

Consequently, differences in architecture and design variations make it difficult to incorporate parts of the bus interface unit directly into terminals, to bridge between different vendors or to interface new vendors via protocol conversion. Moreover, even though each of several vendors may "meet" the standards, it is impossible to compare different pieces of equipment with respect to either functionality or price.

The issue of system and vendor comparisons becomes particularly complex for system evaluation at the upper levels of the protocol family. For example, examine again the configurations shown in Figure 6. Configuration "A" is commonly called a bus interface unit. In today's marketplace, users tend to consider the appropriate price of a bus interface unit to be measured in hundreds-of-dollars per port. However, bus interface units of two different vendors, both meeting the IEEE standard, may offer significantly different level 4-7 software and thereby may differ significantly in price.

This problem is compounded when one examines configuration "B." The communications server of this figure may represent a processor costing tens of thousands of dollars. The difference, again, is at the higher levels of the ISO architecture.

Thus, vendor advertising may clearly state whether the link layer provides CSMA/CD or token access procedures. On the other hand, referring back to Figure 4, some vendors have protocol converters, others do not. Further, some vendors incorporate 16-bit processors in their bus interface units while others use 8-bit processors. The effect at lower levels of this difference may be insignificant, but the ability to provide any kind of protocol conversion even at the level of converting Ebcdic to Ascii codes may be substantial.

Other vendors will provide protocol conversion up to layer three and sometimes even further (for example, from the character set of one manufacturer's word processor to that of another manufacturer). In the past, little (if any) attention or consideration has been given to these factors by vendors, users or editors. No cost measures have been developed, and few adequate analytical procedures have been developed to evaluate various offerings.

User requirements

Two examples will be given here to illustrate the types of requirements we believe are important. The first example considers the requirements of a medical facility. There are specific applications for three modes of required services: voice, video and data. The voice category includes:

- Telephone service.
- Central dictation service.
- Intercom.
- Mobile radio transceiving equipment (base station).
- Radio paging.
- Audio paging.

Video requirements include:

- Emergency medical services equipment.
- Central program distribution.
- TV.
- CCTV.
- Patient monitoring.
- Nurse call.
- Staff locator.

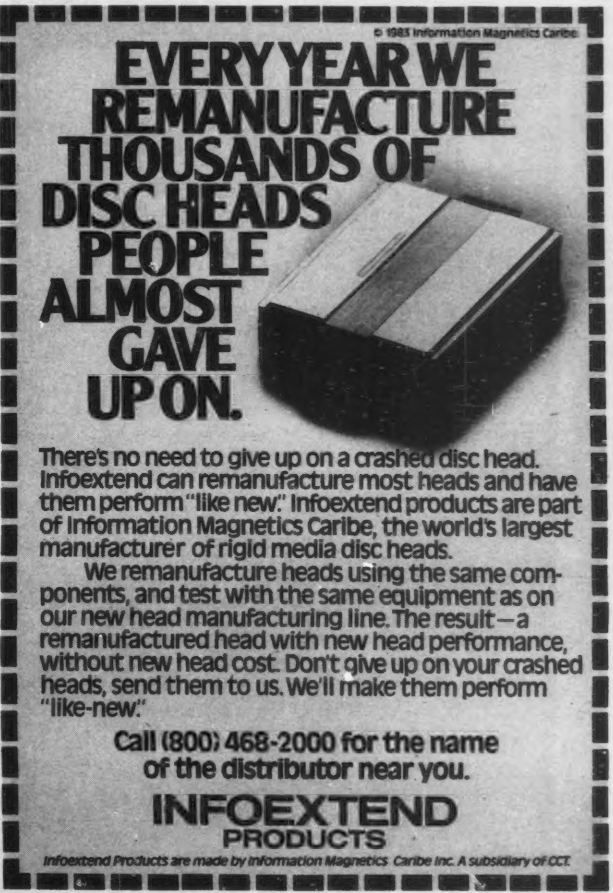
Data requirements include:

- Telemedicine facilities
- Telewriter equipment.
- Information processing systems.
- Fire alarm system.
- Building automation (HVAC).
- Physical security facilities.
- Master clock equipment.

At one extreme, each specific application could be served by a separate network. At the other extreme, theoretically all applications could be carried by a single local-area network. To meet this later extreme, two questions must be answered: Can it be done? Is it cost-effective? While the answer to the first question is yes, the answer to the second question is probably no.

There is general agreement that a private branch exchange (PBX) is currently the most economical method for handling voice. The device is engineered and optimized for the statistical performance and quality required by voice service.

Thus, while there are technical developments in progress to allow voice on local-area networks, it is unlikely that in the near term they will be cost-competitive with PBXs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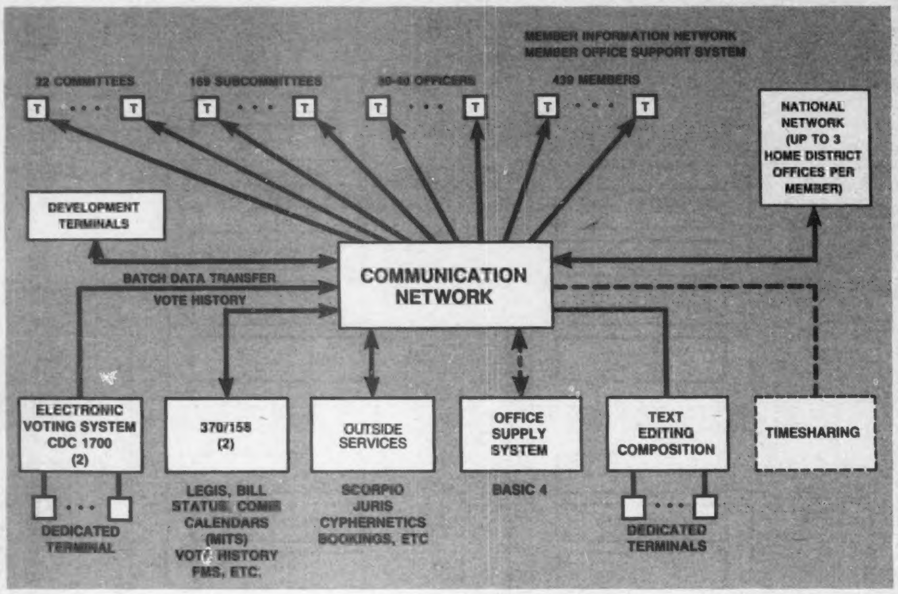

Figure 7. House information system requirements

for straightforward voice applications. On the other hand, local-area networks are well suited to carry substantial amounts of interactive traffic and meet needs for rapidly changing virtual circuits and flexible addressing and/or closed circuit television.

However, we must be more specific in considering individual applications. Thus, level one and two interface standards may be available for devices monitoring patient temperature and blood pressure. However, procedures are required for the correct processing and distribution of the information to ensure patient care, nursing attention and proper data sent to the pharmacy. For each application and monitoring device, this will require special software that may not be available.

Thus, the range of services selected for a local-area network quickly imposes a set of requirements at the lower protocol layer levels and determines whether twisted pair, baseband, broadband and so on are the best selections. However, the real differences between local-area networks and their ability to meet user needs relate to the services provided at the higher levels of the protocol hierarchy.

Government pilot

As a second example, we examine a local-area network specified for, and installed as, a pilot at the U.S. House of Representatives. In February 1977, the House Information System concluded a study to determine the House data communications requirements and to evaluate alternative methods to satisfy these requirements. Based upon initial studies by Network Analysis Corp., SRI International, Inc. and the Mitre Corp., the House of Representatives decided to implement a local-area network.

A pilot project was implemented to develop a bus interface unit, gain experience with a local-area network and develop the skills necessary to diagnose, maintain and modify the equipment and software. The project would help determine ways to improve performance, minimize cost and verify design procedures.

The pilot project was begun in December 1978 and concluded in October 1980. Subsequently, the House decided to hold hearings of a technical advisory panel on the digital data communications network in order to receive the views of experts on the progress to date, contemplated actions and prognosis for the future. The hearings were published and are available from the U.S. Government Printing Office.

A block diagram of the system requirements is given in Figure 7. The system required multiple hosts, dedicated terminals for office, data processing and text editing, as well

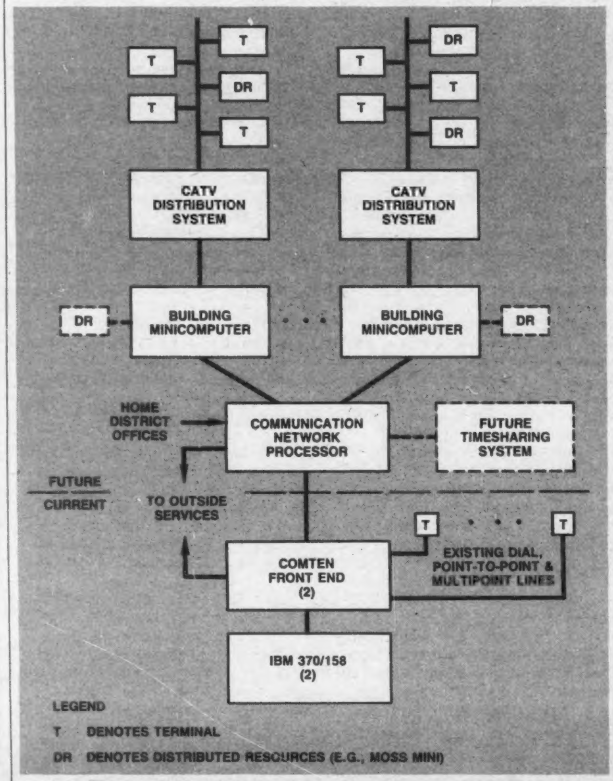

Figure 8. House information system solution

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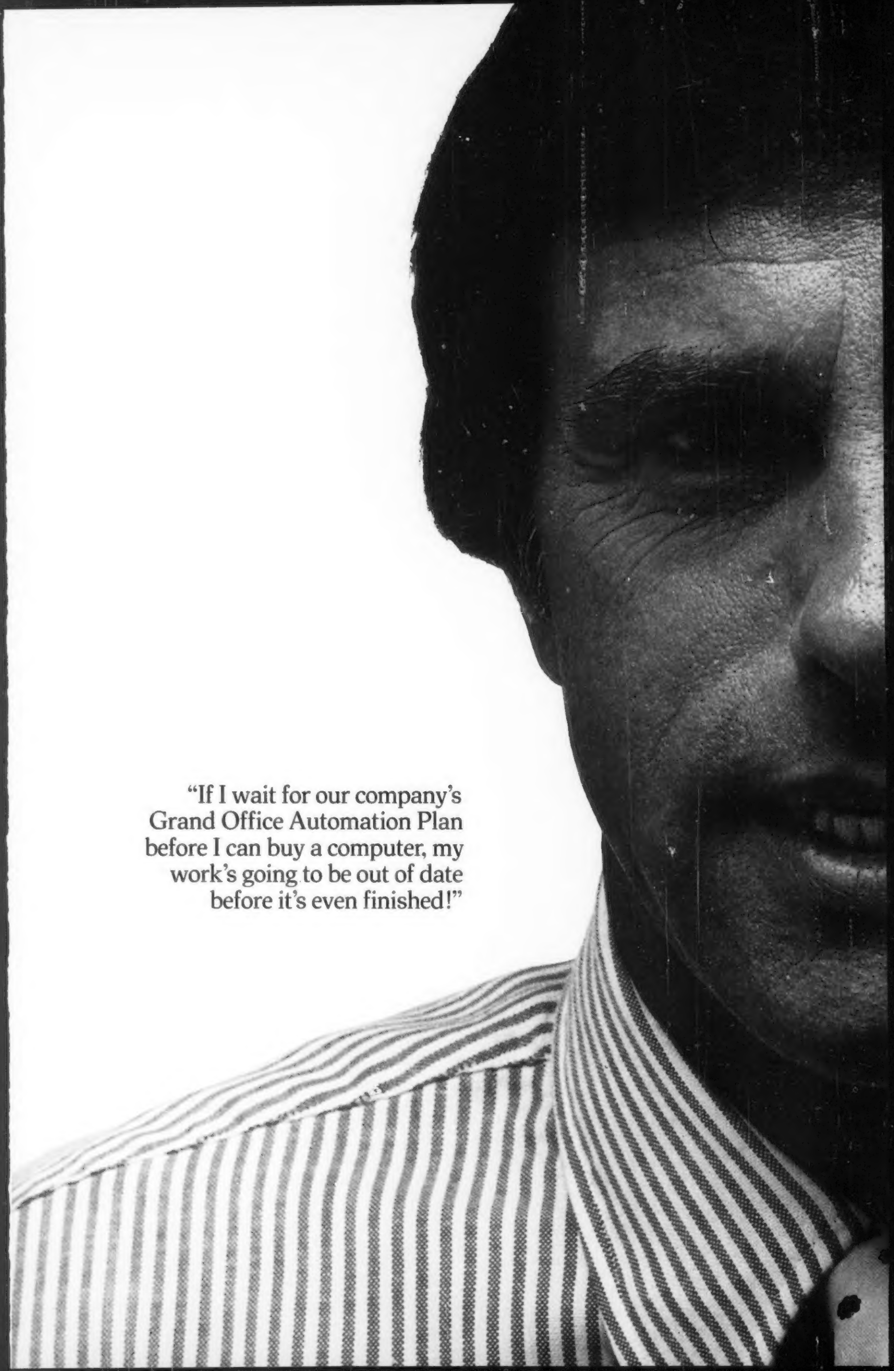
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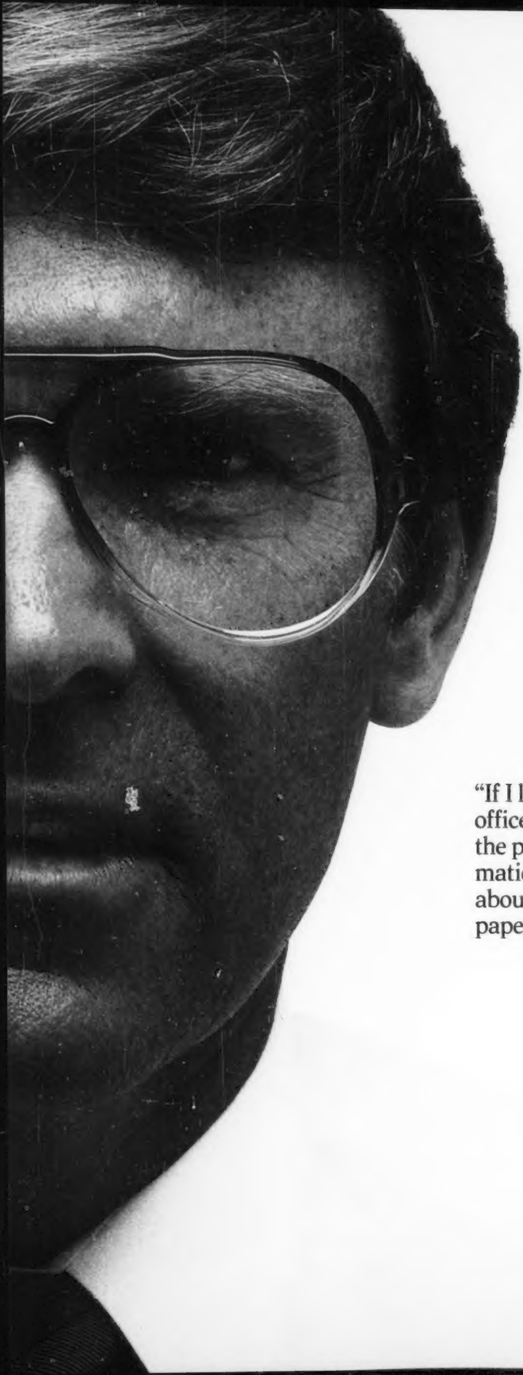

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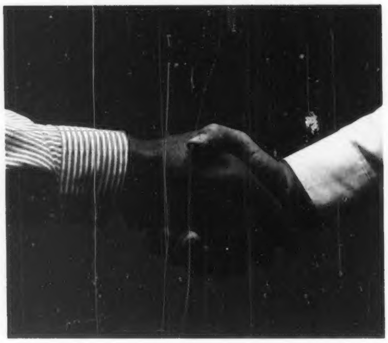

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Users must have multivendor service. They should be able to attach to the same local-area network, mainframes and terminals from different vendors and a variety of new minicomputers, microcomputers and personal computers.

as several gateways to nationwide networks for the members of the House.

The system requirements also included a need for closed circuit television for members to be able to view proceedings from their offices and long-term requirements for local teleconferencing, audio-to-computer interfaces, electronic mail and distributed processing. The system itself was configured as in Figure 8 on ID/8 and implemented with dual coaxial cable using CATV technology. Ultimately, the full system is expected to serve 2,000 to 2,500 terminals. The initial pilot system used 21 bus interface units, connected one host and had one network control center.

At the completion of the pilot, the House convened its panel of experts to evaluate progress to date and make recommendations for the future. The panel represented the following organizations: Control Data Corp.; the National Bureau of Standards; TRW Corp.; Xerox Corp.; General Motors Corp.; Advanced Research Projects Agency; Tandy Corp.; AT&T; 3M Co.; Sytek, Inc.; Bolt Beranek & Newman, Inc.; the General Services Administration; the Stanford Research Institute; Mitre; and Network Analysis Corp.

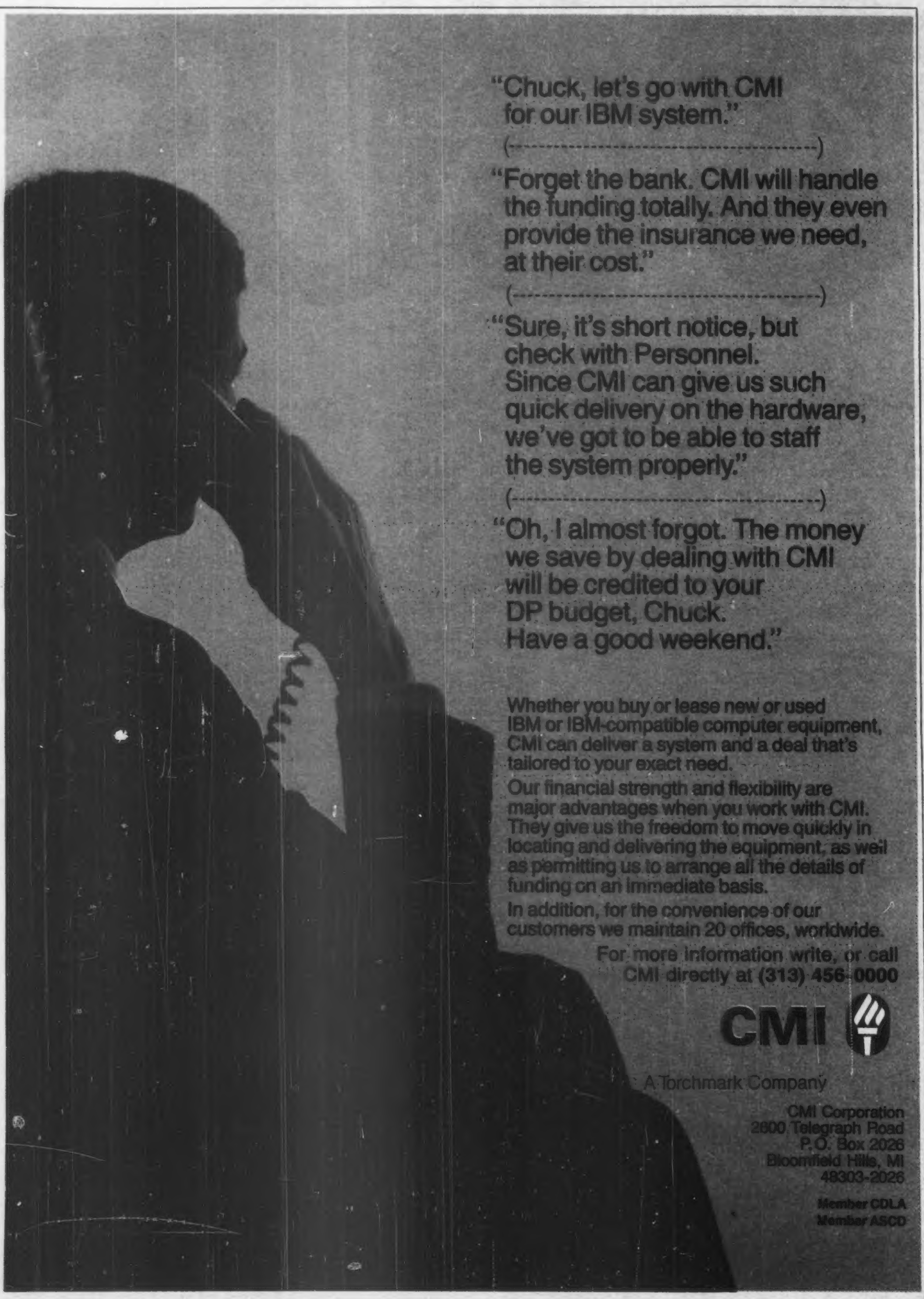
Expert 1 made several points. First, the managers of the system should be prepared for the House to have many more computers than envisaged in their original plan. These will be microprocessors and personal computers. He made the point that there will be many new applications such as file transfer and electronic mail. He had a strong concern that there must be a variety of interfaces for internetworking through X.25 and finally made a key point, that the developers should conform to the ISO standards and take a coordinated view of system software architecture.

Expert 2 was concerned with the introduction of encryption and emphasized new modes of communication. He also recommended the development of a variety of gateways and had an even deeper concern for the development of a software architecture within which to introduce new software packages in a coordinated manner.

Expert 3 also stressed software architecture and internetworking. In addition, he introduced a new element to consider in the analysis of the cost impact of local-area networks: When considering the justification for bus interface units and other hardware and software, rather than simply examining displacement costs for modems and lines, one should examine the more wide-ranging issues of productivity improvements. He made the point that network control is important, and a powerful network control center should be developed. Finally, he indicated that a variety of host interfaces should be developed.

Obviously, unanimity did not emerge from the testimony and debate of the panel. Many side issues extraneous to the point of this article were also discussed. However, there was much agreement about what is really required in a local-area network.

Our conclusions about the panel's consensus are summarized here: Gateways were recommended by seven of the experts, preparation for new applications and services by six, the ability to interface new equipment by six, the importance of a software architecture and multivendor protocol conversion by five, the importance of a network control center and system diagnostics and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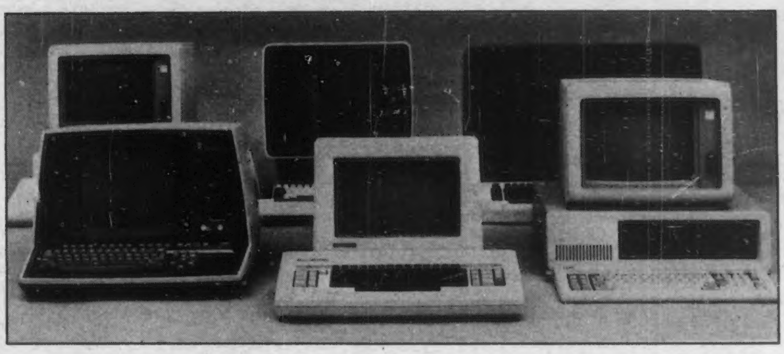

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monitoring by four and ensuring that expanding requirements can be satisfied by three. Numerous other issues were discussed by at most one or two people.

Aside from interfacing new equipment, all of these "real user requirements" involve the higher layers of the ISO protocols. Even the requirement to interface new equipment involves not just RS-232 pin connections, but the ability to transact business by transferring files among heterogeneous vendors and devices.

Putting it all together

The two examples referred to illustrate the need to examine the real requirements before selecting a local-area network. Almost all end-user requirements have a major impact on the structure and content of the higher level protocols. Unfortunately, these levels are still in a state of flux. Further, many users are unsure of their long-range requirements.

One of the most critical requirements is gateways to the outside world. While most communications flow remains within the facility, a substantial component enters the outside environment through other networks. Furthermore, in many cases local-area networks will serve as the medium to integrate all of the other outside services utilized by the organization. Thus, the only link among satellite services, teleconferencing, telephones, data processing, videotex and other services may be the local-area network.

Users should look for flexibility and ability to grow. They should choose systems that allow them to move terminals about, use different protocols for different terminals and give them the ability to expand their system gracefully as the number of terminals and the number of services increase.

Users must have multivendor service. They should be able to attach to the same local-area network, mainframes and terminals from different vendors and a variety of new minicomputers, microcomputers and personal computers. In this same regard, they should count on the local-area network to provide the protocol conversion services to allow them to interface to other networks.

When selecting a local-area network, a user should keep in mind that it is unlikely that any one vendor will have all of the higher level software needed to meet its application requirements. Therefore, the local-area network should have the ability to add customized software, developed either by the user or by custom software or system vendors.

Network management and control is one of the most important issues. There is a universal need for users to have centralized management and control of the network. As the number of terminals grows from the hundreds to the thousands, a network management center with diagnostic, control and statistics capabilities is a mandatory requirement. Once the network control center is functioning at layers one through four, it will be possible to expand its domain to the session and applications layers for statistics, billing and other functions.

For small networks, network control centers can perform standard diagnostic and statistics functions and be procured as off-the-shelf units. However, as network management extends higher into the business functions of the organization, these systems will require tailoring and customization. For example, we expect to see network control centers eventually tie into the financial systems of the organization with inventory, billing and other record-keeping functions.

Finally, as we incorporate the two highest layers of protocol (the presentation and application layers), the line blurs between the data processing or applications modules attached to the local-area network and the bus interface units and other components of the network. In this sense, the evolution of local-area networks is following the path of evolution that computer networks took years ago.

With the development of front-end processors, the line between the communications facilities, the front-end processor and the host processor started to blur. Major decisions had to be made in individual designs as to where to place intelligence for specific protocol conversions and telecommunications processing. The same decisions now face the users of local-area networks.

For example, an X.25 packet assembler/disassembler can be incorporated into the bus interface unit or placed in the host. Also, a local-area network can be the heart of a fault-tolerant system where the local-area network routes among primary and back-up processors. In this case, many of the fault-tolerant functions are performed by the local- area network.

The local-area network business started by selling a communications system with layers one and two of the ISO model. Today, you can expect any vendor to provide these lower layers. However, such networks are unlikely to meet the real business needs of the application. The real problems are at the higher layers with few off-the-shelf solutions.

The industry has gone through a three-year period of strife to determine whether local-area networks should be token or CSMA/CD and baseband or broadband. These arguments should be relegated to footnotes in the encyclopedias of history. It is time now to consider the real issues and needs so that local-area networks will fulfill their promise.

About the authors

Howard Frank is president of Contel Information Systems, Inc. in Great Neck, N.Y. Ivan Frisch is senior vice-president at Contel.

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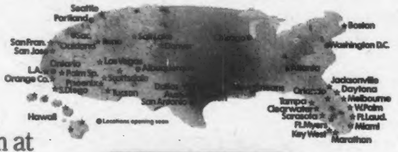

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CORPORATE CULTURE

By David Vincent

> *"Corporate culture means the way we do things around here."*
> —Marvin Bower, McKinsey & Co.

Human culture is a result of learned behavior; it is not an intrinsic human characteristic. Therefore, the culture of an organization is a result of "programming" people how to behave in the organization's environment.

The transfer of information creates a corporate culture. The resultant knowledge base governs the way that its executives and employees are expected to behave.

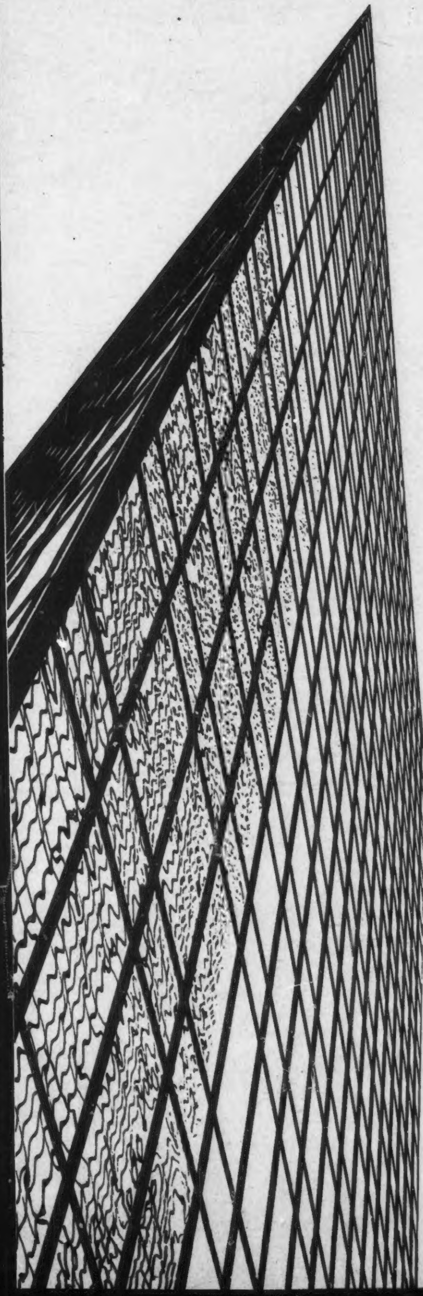
Since there is a unique body of collective knowledge in each organization, the result is separate and distinct corporate cultures and subcultures. For example, a company such as General Motors Corp. has a corporate culture and also separate subcultures in each division that contain even further subcultures within their separate departments.

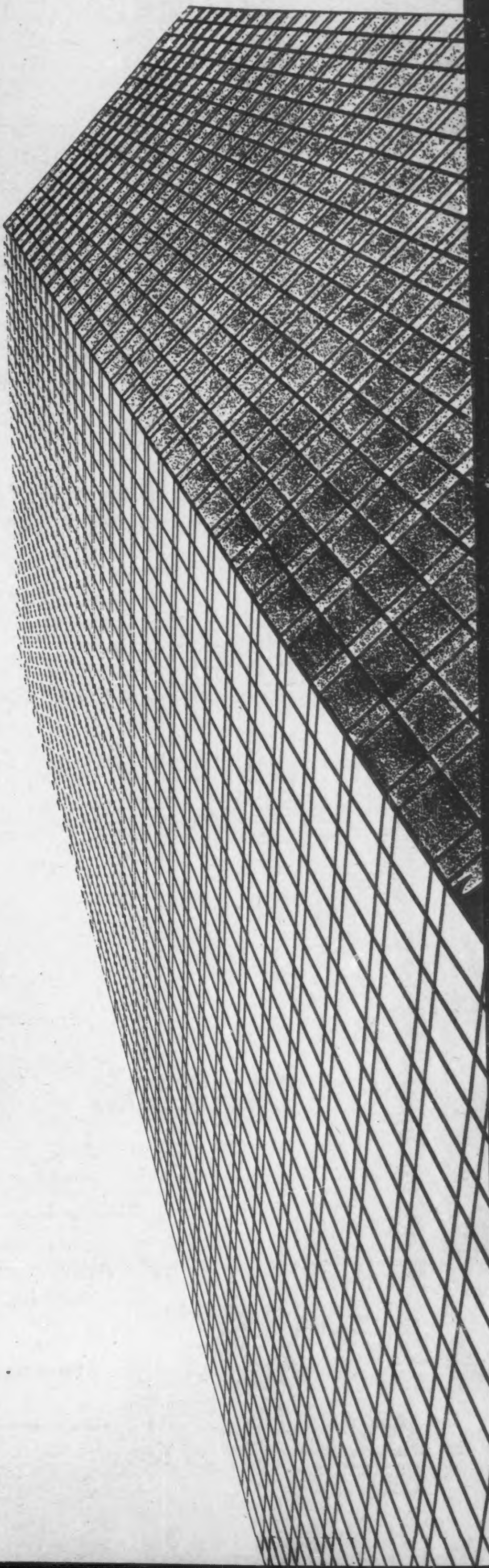
The effect of information on the corporate culture is governed by two basic concepts:

1. Personal and organizational behavior is a direct result of acquired knowledge.
2. Knowledge is a result of information that has been transferred.

Therefore, all corporate cultures are created through the transfer of information. The resultant knowledge base within a corporation governs the way that its executives and employees are expected to behave. Nonconformist behavior is usually punished, with the result that an individual or group may be ostracized or set aside.

An example of such a nonconformist group within many organizations is the traditional data processing department. The result has been a strong subculture of computer experts that identify with each other but not with the larger organization. They are often found congregating with others





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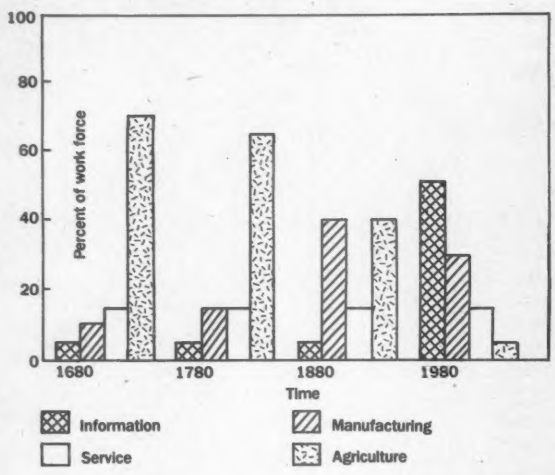

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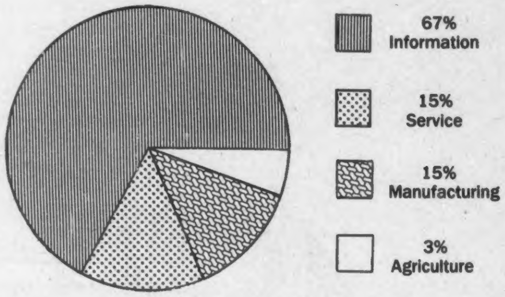

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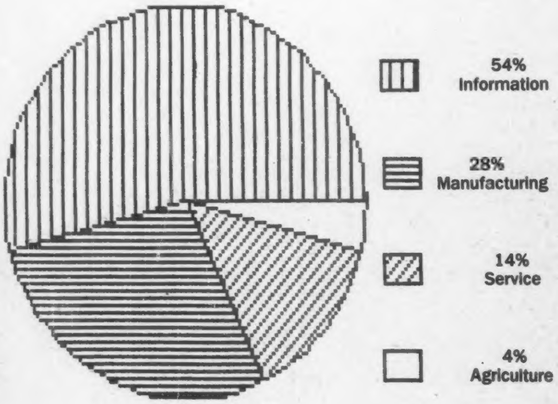

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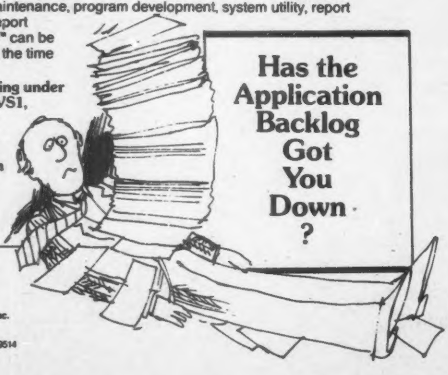

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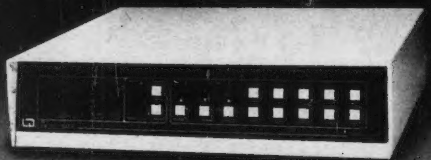

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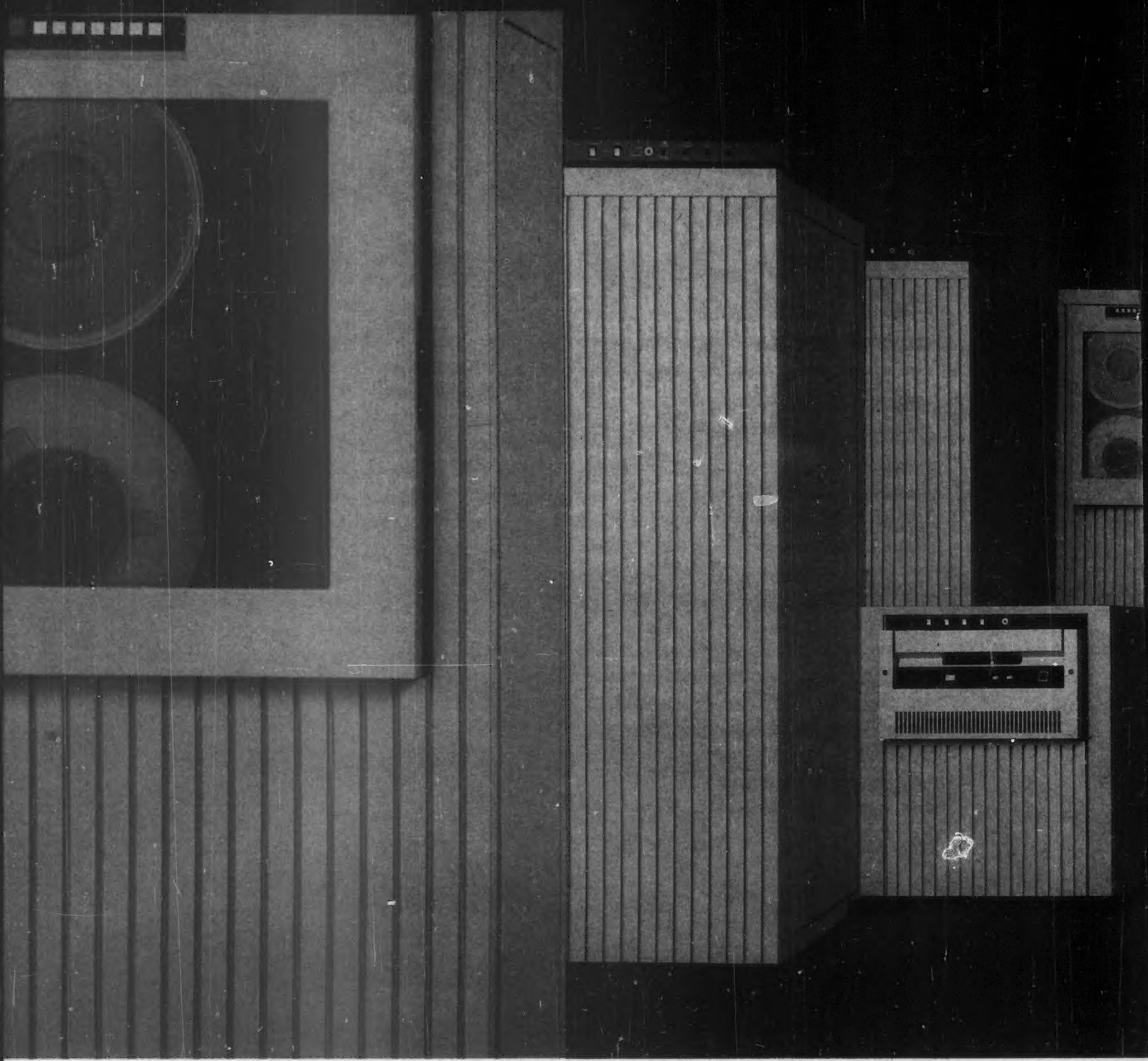

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Knowledge is intertwined with culture because it is a result of information-based programming of people or machines to take a predetermined action on new information received. The proper management of corporate culture means the establishment of control over information transfer mechanisms (including information systems) to ensure that executives and employees will send and receive quality information that will produce the optimum effect for the organization.

Companies that ignore this aspect of management, particularly in situations of corporate mergers and acquisitions, will most likely experience serious losses as a result of inexplicable anti-corporate behavior.

One example is a small, successful firm in the business of automated factory data collection that was acquired by a large mainframe and terminal manufacturer. The acquired company's culture was based not on leading-edge technology but rather on its depth of understanding the complexities of the manufacturing environment. The small firm's culture was extremely quality and service-oriented.

The acquired company was forced by the larger organization to abandon its former culture in favor of one where product proliferation and optimum service expense (reduced service) were the object of executive reward. The management of the acquired company — which had been with the firm for many years — was asked to conduct business in a strange way, a way that was also strange to its customers.

The result: confused executives, employees and customers, along with a significant loss of market share, revenue and profitability. Unfortunately, the larger company repeated this behavior with two more acquisitions shortly thereafter. The pitfalls of "strong" cultures will be discussed later.

Suffice it to say that insufficient attention was given to the positive effects that existed in the acquired companies' cultures as compared with the ego satisfaction of instilling the larger organization's corporate culture. The net result was that the new parent company's return on investment on the acquisition dwindled to nil. This poor return on investment was not because the larger organization's culture was not good for the larger organization. It was just not appropriate for the smaller organization.

Both companies would have been better off if the acquisition had never taken place. The only winners were the major stockholders of the acquired company, who sold out at an inflated price. Such is the saga of most acquisitions: grabbing the brass ring without a thought given to developing expertise in merging corporate cultures.

Control of resources

Those who control the corporate information resource hold the key to the success of an organization. Over time, control has passed from farmers to merchants, from manufacturing executives to financial executives and from sales executives to marketing executives.

The chart showing labor deployment on ID/22 illustrates how the work done by people has changed with the introduction of technology, first through the industrial revolution and then at the threshold of the information economy. By 1983, more than half the work was done by people in the labor force, including the traditional categories of blue-collar and white-collar workers. They are still producing goods and services, but they are doing it with information.

By the end of this decade, more than two-thirds of the work force will be completely information dependent. In this scenario, what kind of power will the information providers have?

The first group to have control over the organization after the industrial revolution in the late 18th century were the manufacturing experts. One notable was Charles Babbage, who designed the first computer. These experts held the most important corporate information and were, therefore, the focus of the corporate culture.

One entire culture was founded on the ideas of Frederick Taylor, sometimes called the father of scientific management. The corporate heroes came from the manufacturing ranks because they were in control of the information related to the critical success factors of the business.

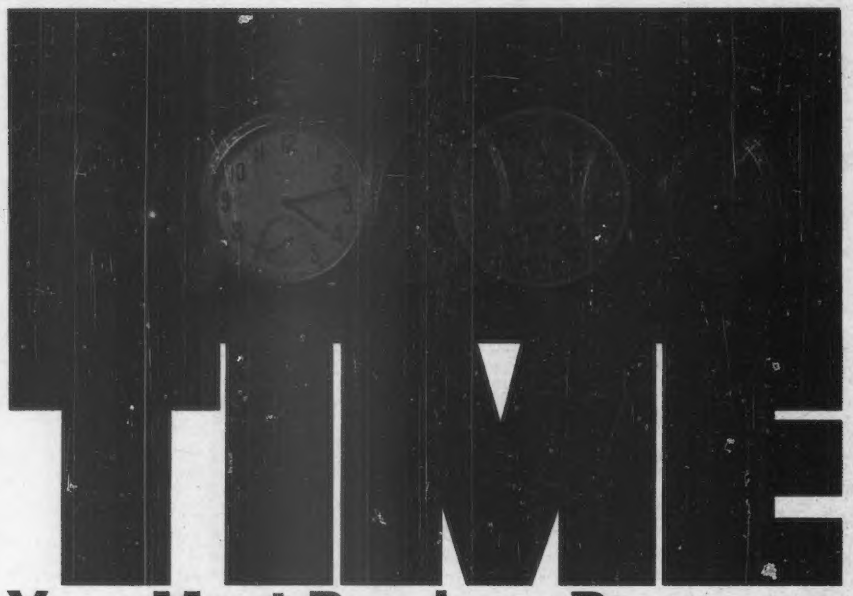
As the industrial revolution matured, the financial experts took over control of the information vital to the success of the organization. This change came about as a result of the shift of corporate power caused by the intensity of capital investment in the industrial sector.

From financial ranks

Those companies that could leverage their working capital the best were generally more profitable and could expand into burgeoning markets. It is no accident, therefore, that the chief executive officers of General Motors have traditionally come from the financial ranks. Critical information in the automobile industry was — and, in large part, still is — related to obtaining low-cost capital (managing the investment community) and then optimizing the return on investment.

Actual knowledge of the automobile market was sadly secondary. Evidence of this fact is the way the Japanese have penetrated what was once a 100% American-made buying attitude.

As domestic and foreign competition increased in the established industrial environment, the heroes began to emerge from the ranks of marketing. This change came about



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Future chief executive officers may well come from the information management ranks. This change has already taken place at Bank of America, Citicorp and American Airlines.

as corporations' boards of directors focused their attention on market share, competition, multinational marketing environments and the care and feeding of the perception of excellence. IBM is an example of such a market-driven company.

Information technology

We are currently experiencing yet another shift in the locus of power and, consequently, impact on the corporate culture. Computers and the attendent information technology drive the manufacturing, marketing and financial control of a company. The new power elite will be made up of information executives. A corporation in today's information economy that does not have an information executive on a par with the chief financial officer or the chief operating officer faces a very uncertain future.

Successful corporations of the future will depend on chief executive officers that understand information management and the way that information technology can be employed to gain competitive advantage. These future chief executive officers may well come from the information management ranks. This change has already taken place at Bank of America, Citicorp and American Airlines.

The evolving concept of the chief information officer is a step toward moving the top information executive into the inner circle of the corporate elite. This very important corporate position is defined as that person having the complete responsibility for the corporate investment in information, including information systems, communications, security and information standards. The chief information officer's relationship to information is analogous to that of the chief financial officer's relationship to money.

The single largest hurdle for chief information officers will be their ability to understand the corporate culture and how change can be implemented by someone who has traditionally been considered an outsider. The critical success factor for information executives will be their ability to shift the corporate focus of planning, organizing, implementing and measuring to include judging the effectiveness of the greatest corporate asset: information. This means behavioral modification of the organization and its subgroups, particularly the information systems group itself.

There is a universal phenomenon that exists in all corporate cultures: the fortress mentality. This mentality is based on the animal behavioral characteristic of the territorial prerogative. When the line of demarcation has been transgressed, the animal is ready to defend to its death its territorial rights. The fortress mentality has been a major factor in determining the survival of a species.

These imaginary boundaries in regard to humans have resulted in massive amounts of violent death as a result of invasions, wars and other attempts to control tribes or nations not wishing to be invaded or controlled by outsiders.

Corporate environment

This same territorial prerogative exists within corporations. The lines of demarcation are drawn both geographically and functionally within the corporate environment. It is most easily seen when it comes to the issue of who "owns" corporate assets (especially information). Some lines of demarcation are implemented by top management with official corporate pecking order schemes. The earlier example of the large organization that acquired the smaller one drew its lines of demarcation according to these rules:

- Clerical workers are allowed 100 square feet of working space.
- Supervisors are allowed 150 square feet.
- Managers are allowed a partitioned work space and two side chairs.
- Directors are allowed a larger partitioned work space, a large desk, two side chairs and a table.
- Assistant vice-presidents have a sofa, credenza and a potted plant, in addition to what the directors have.
- Executives of the "inner circle" have offices designed to reflect the corporate image to influential outsiders.

Such pecking order systems are further enhanced with repressive salary administration packages that reward compliance with corporate structure and are based solely on the number of people supervised, the size of the budget and the "impact" or level of decision making. Such salary administration systems, typified by the Haye Point System, would have been ideal for Prof. C. Northcote Parkinson's days at the Royal British Admiralty.

Organizations are also segmented into functional departments: for example, marketing, finance, operations and development divisions. There are also informal demarcations formed between carpoolers, joggers and the company baseball and volleyball teams.

Another important corporate phenomenon is the demarcation created

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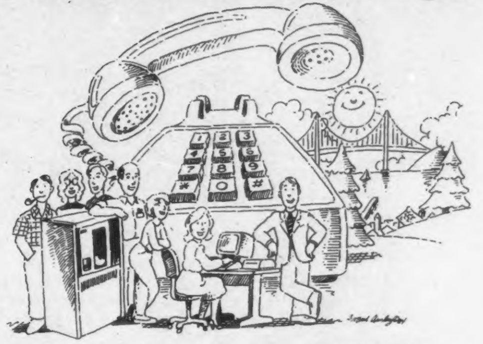

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by geographical separation. The results are manifested in two kinds of corporate illnesses:

1. **Outpostitus:** "Those corporate bastards are only out to use us. They issue idiotic directives and find every opportunity to keep us in the dark and unrecognized by upper management."

2. **Corporatitus:** "Those clowns in the field need to be told again and again how they should be doing things because all they care about is their myopic effort of bringing in orders for things we don't sell, constantly requesting funds that they don't need and complaining all the time about every little real or imagined problem. What's worse, they don't understand that we're really trying to help them. In fact, they are downright nasty about receiving corporate assistance."

In their recent book, *Corporate Cultures*, Terrance Deal of Harvard University and Allan Kennedy of McKinsey & Co. identified four basic kinds of corporate cultures:

- The tough guy, macho culture.
- The bet-your-company culture.
- The process culture.
- The work hard/play hard culture.

The expected behavior of people in these cultures is vastly different. All are the result of certain kinds of information structures. Each, in turn, values information in different ways.

Tough guy, macho cultures (there are also many corporations run by tough women such as Lucille Ball and Claire Booth Luce) breed managers who emulate the top tough guy. In this environment, the lines of demarcation are clearly defined, and the toughies will seek the heads of any transgressors as vehemently as any fierce animal whose territory has been invaded.

The toughies consider themselves to have exclusive ownership rights to "their" information. It would be considered a sign of weakness to share it with any other part of the organization. In fact, a request for information sharing will result in intense reactive behavior: a grab for the information systems (and its resident information) and the effort to make it the exclusive property of the tough guy.

Few resources

The bet-your-company culture may be receptive to information sharing, but it will allocate few resources to perform such a spurious task. However, such groups as sales will probably work with limited variables. These people are apt to keep their own files manually or in their head. How could information ever be considered an asset in need of executive attention in this environment?

Executives in the bet-your-company environment are betting their company on a few key decisions with little or no feedback expected for years (a good example is an oil exploration company). Decisions are based on the concept that "it should be done right the first time" and long deliberations ensue.

A mistake in oil exploration can be a dry hold that cost $100 million to dig; a pharmaceutical company may issue a faulty medication with disastrous results. Information is generally kept for the purposes of product research or exploration, legal requirements and then marketing. Other information is secondary and is maintained only to perform such routine tasks as payroll and other accounting applications.

If a proactive chief information officer attempts to modify this corporate behavior, he must plan for a slow, methodological approach to the implementation of information management. If the bet-your-company business cycle is six to eight years, implementing information management will tend to conform to the same "flywheel" determined cycle. (I call the basic business cycle a flywheel-determined cycle, which tends to force all other corporate activities to revolve at the same speed).

The process (bureaucratic) environment, on the other hand, pays meticulous attention to detail and produces more "information" than

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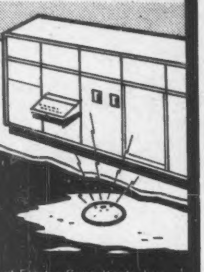

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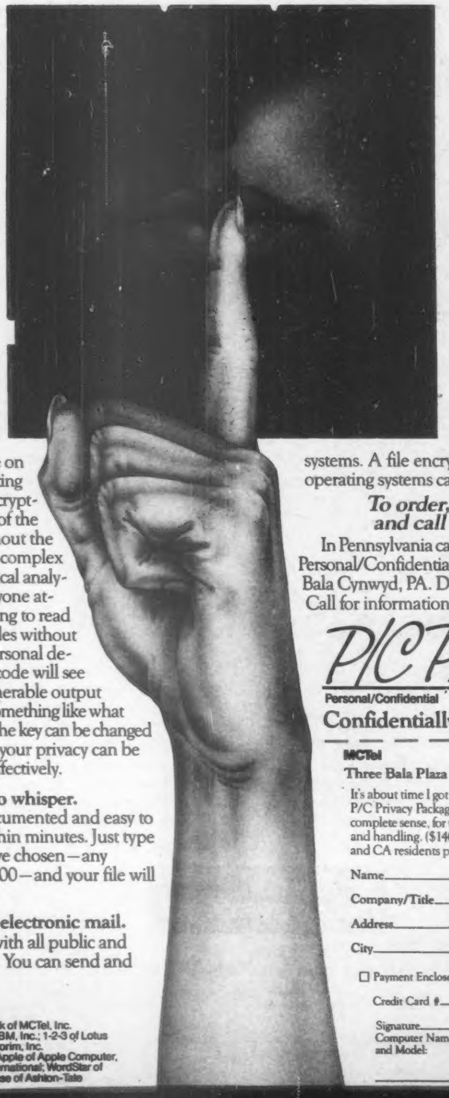

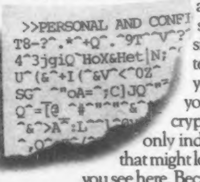

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any other culture. In fact, there is so much information (more appropriately called data) that it is really difficult to determine the reasons why the information is being created, much less what to do with it. The government investment in information is an order of magnitude higher than the corresponding investment in information handling systems.

The requirement for change in the cultural aspects of information and the implementation of technology in the federal government is at last receiving some attention. The U.S. Paperwork Reduction Act of 1980 is intended to eliminate some of this waste. Large government task forces have been formed. So far, there is a general recognition that much of the information process must be standardized and automated.

The Grace Report of 1983 found that the single largest contributing factor to government waste is that it has 17,000 computers, most of which are obsolete and incapable of providing information at the right place, the right time and in the right form to allow normal government processes to function.

The Information Management Technology Division of the Comptroller General's office is the result of a reorganization of that auditing group. It is intended to assist federal agencies to move to more advanced methods of information processing and to ensure the proper planning and control of information systems. The major obstacle to this process will not be a technological one, but a cultural one. The provincialism that exists in process-oriented organizations blinds the individual departments to the larger picture.

The Department of Defense has instituted the Directorate of Management Improvement to implement major cultural changes in the way the military deals with information. The U.S. Army Computer Systems Command, the Executive Office of the President and the Office of Management and Budget have all selected executives to motivate and establish the types of "heroes" needed to produce cultural change. The World Bank, while not a government institution, has established a model that might well be followed by process-oriented organizations wishing to optimize their investment in information.

The work hard/play hard culture is the predominant culture in high-tech industries. Emphasis is on growth, with the sales department driving the rest of the organization to provide products that will "blow away the competition." The corporate heroes are those who produce results. Information exists in this environment, but it is dispersed, personalized and informal.

The bulk of the information generated is geared toward identifying sales prospects and closing sales. Quote plans, competitive moves and sales results receive maximum attention. Yet any attempt to centralize information bases in this environment generally falls short of expectations. Field people are just too busy to provide the proper information for a centralized system. The folks at the central site are too busy putting out fires to implement a high-quality, usable and effective information system that will serve the needs of the entire organization.

The cultural pressure in this environment is to show short-term results. Long-range information management projects don't seem to fit the corporate scheme. They involve too much expense in the current period. This culture just keeps running hard and working by the seat-of-its pants.

In each of these varying environments, many of which will exhibit more than just one of the above cultures, the chief information officer is expected to become the proactive change agent for the corporate use of information. His mission is to bring about the desired cultural changes that will enhance the effectiveness of the organization's basic operations.

About the author

David Vincent is general manager of the Institute for Information Management in Sunnyvale, Calif. He is vice-president of Boole & Babbage, Inc. Vincent has more than 20 years of financial, accounting and information management experience and has managed firms in 15 countries. He is currently writing a book on information economics.

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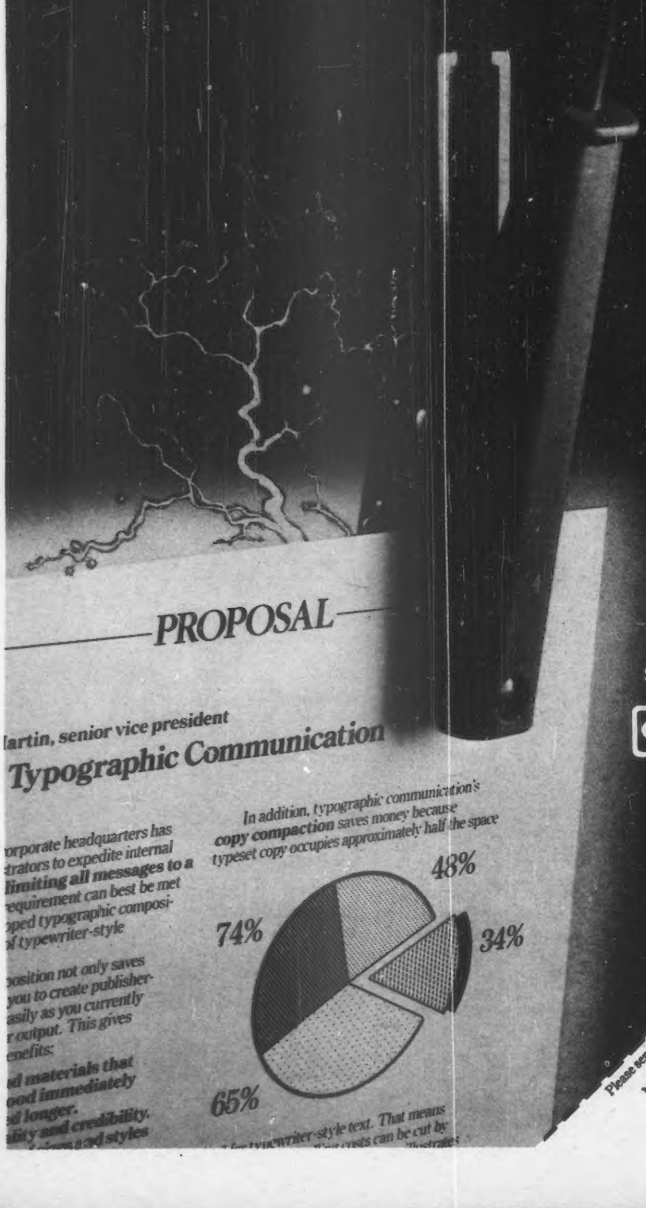
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IN DEPTH

The 'in' place to buy micros

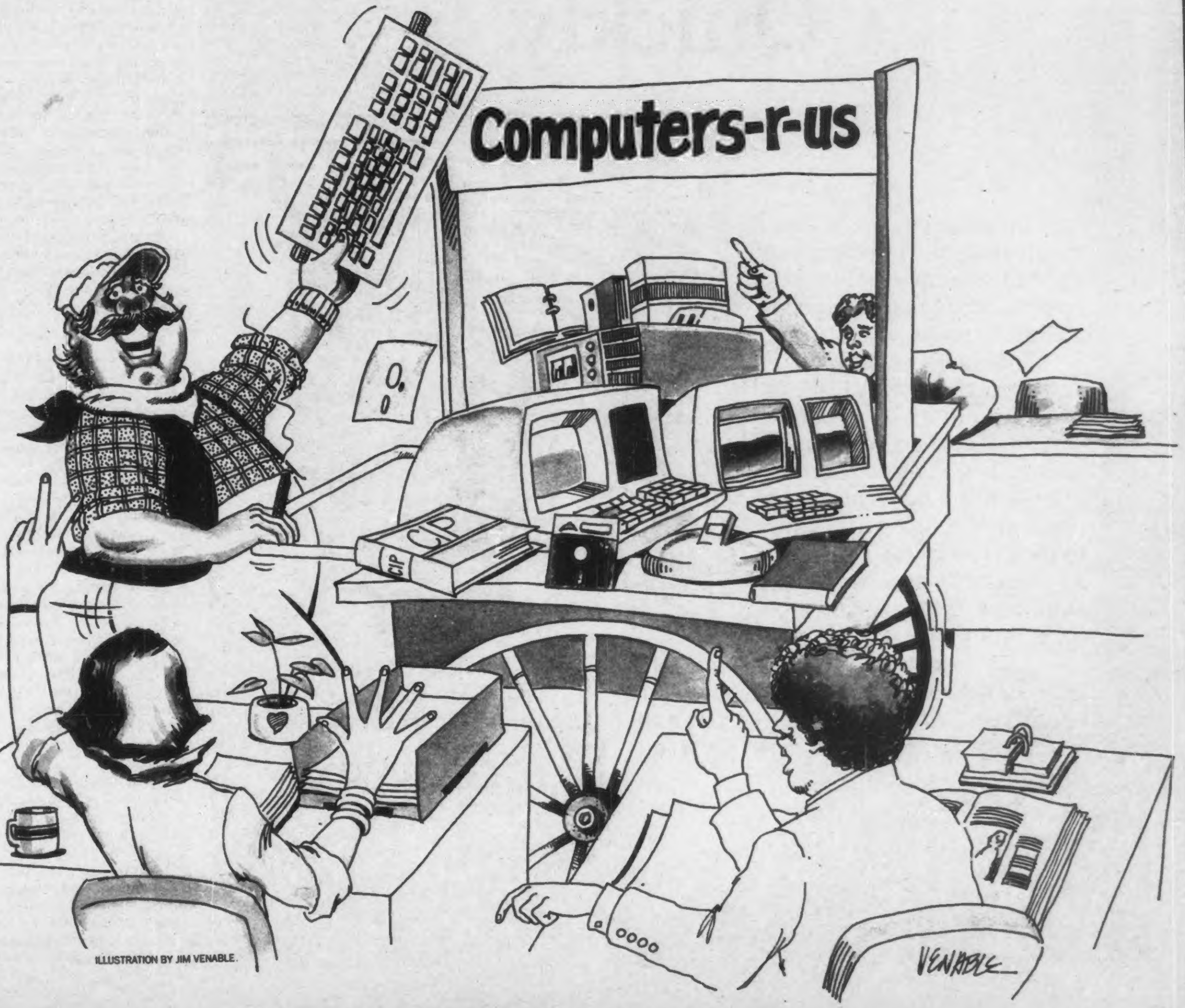
Microcenters are not information centers. Microcenters are much more unstructured environments that focus on developing custom solutions to problems.

By Laurie Young

Microcenters offer MIS management the opportunity to develop a strong relationship with users that benefits both groups for years to come. What exactly are microcenters? In the broadest sense, they are central locations where employees with an interest in microcomputers can come to select hardware and software, as well as receive advice and training. Microcenter staffing and equipment can range from one micro with a part-time staffer to a specially designed and constructed microcomputer "store" within the company.

Services provided by the microcenter are specific to the needs of the company but could include hardware, software and peripheral evaluation, training and supplies warehousing. For example, one major bank spends virtually half its staffers' time helping users access and download mainframe data via its micros. The bank has spent a significant amount of money stocking its center with the latest in communications equipment. The most effective microcenters provide a service mix determined by the needs of the user community.

Microcenters are not information centers. They are very unstructured environments that focus on developing custom solutions to information problems. Information centers, on the other hand, tend



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to deal with information needs in a very structured, nonexperimental fashion.

Four advantages

Microcenters offer opportunities in four areas in addition to the benefits of a strong and positive relationship between MIS and the user community:

- Standardization and control.
- User assistance.
- Purchasing efficiency.
- MIS corporate image.

Standardization and control. The only companies without microcomputer control problems are those that don't have very many microcomputers. Even companies with strict MIS sign-off procedures have their problems — not to mention the continual enmity of their users. Microcenters offer the opportunity to develop a de facto standard with the support of the user community and, if necessary, the teeth of top management support.

For example, a major bank displays and supports both IBM and Wang Laboratories, Inc. personal computers in its microcenter. The bank keeps a library of software that operates on both types of systems and has a staff well versed in the operating procedures of each machine. The bank has no fixed policy that dictates users must buy IBM or Wang equipment, but if the users wish to take advantage of the extensive microcenter operated by the bank, the implication is clear.

User assistance. As any MIS manager knows, once end users obtain microcomputers, they will usually require some type of support. Although the original vendor often provides initial support, at some point the original vendor will be unavailable, and the user will arrive at the door of the MIS department looking for anyone who can explain a parity check error.

This process creates a situation that wastes everyone's time to provide information of dubious reliability. Microcenters offer the opportunity to provide consistent, accurate information to end users. They serve as a focal point for all microcomputer-related questions, pointing users quickly to the right track.

Purchasing efficiency. Microcenters also help companies more effectively purchase microcomputers and their associated products. Standardization means that more of the same types of machines are being purchased (in other words, volume discounts are available). User assistance implies that less unsuitable hardware and software is purchased by unsuspecting users and that problems can be resolved in less time. Volume purchase agreements can be instituted with a handful of vendors to provide better service and lower prices.

MIS corporate image. Not to be discounted is the opportunity for MIS management to increase its standing within the corporation. Unwittingly or not, many MIS departments have alienated themselves from the end-user community.

A microcenter allows, and indeed demands, continual give and take with the user community, creating an excellent opportunity for the MIS group to create a continued, positive impression of the other corporate functions. This is especially true if MIS runs the microcenter to maximize the level of assistance provided to end users, rather than the level of control over the microcomputer equipment.

Major areas

If you've decided that a microcenter might be a good idea for your company, here are some of the major areas that you'll have to address.

Management support. You've decided that MIS will open a microcenter. Now, who else thinks this is a good idea? Obviously, whomever you report to will have to like it, but that isn't necessarily enough.

You need broad top management support to really make this work. You need management not only to go along but to see potential benefits for itself so it won't vacillate at the first rumblings of discontent. (You didn't think everything would go smoothly, did you?)

Get management to give you a grace period, during which it promises not to interfere, so you can get things up and running.

You don't necessarily need management support to have a microcenter. You could do such a great job that the users would support you, even during the initial

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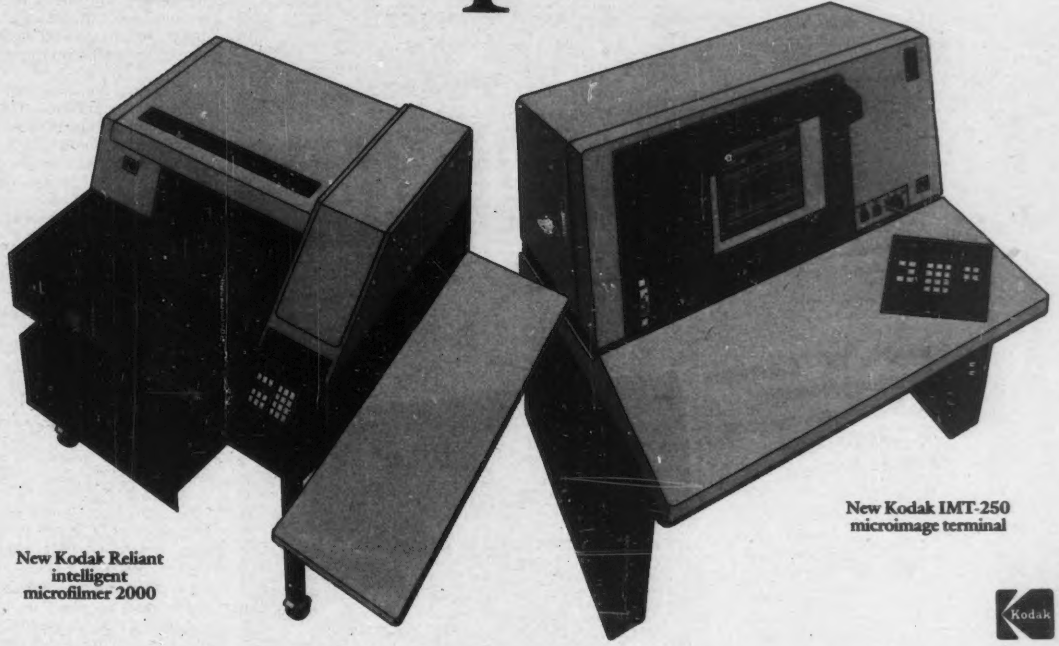
They're so smart they program their operators.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phases — but don't count on it.

Budget. Now you've got your management support. On to the heart of the matter — the budget. Costs will be dependent upon the services you hope to provide. Don't make the mistake of trying to do too much with too little money. One high-tech firm has two employees assigned to assist its microcomputer users.

Unfortunately, those employees are also charged with jobs that occupy them for the better part of the day. The result: harried staffers and unhappy users.

Unless the company is planning to free the staffers for full-time microcomputer assistance work, this firm would have been better off having them assist in an unofficial capacity. Instead, it appears to users that the MIS group is doing only half the job.

User base. What is your user base? How many people are using microcomputers that might use microcenter services? Be careful about this. One client counted 25 micros and made the fatal mistake of assuming that there would only be about 50 to 75 users. Each machine actually averaged five users, and they had all talked to other employees who felt that they, too, could use a computer, if only they had some help. The staff was overwhelmed, and the microcenter alienated almost everyone before things were straightened out.

This is the perfect time to do a user survey. You can find out how many users you'll have to support, as well as what their primary needs will be. Don't just send around a questionnaire asking how many people use or want to use microcomputers — follow up with personal interviews for verification. Let the users help you to help them. This data is essential in sizing the microcenter and determining what services to offer. It is also useful for convincing top management of the need for such an operation.

User needs. Obviously, users would like to have everything. But before you can decide what you'd like to offer in the microcenter, you first have to determine what people need. That's where the user survey can be valuable.

In a user survey for a bank, we discovered that virtually all the responding users were interested in either general training or training in Lotus Development Corp.'s Lotus 1-2-3. The bank followed up and developed a list of more than 200 potential "students." Training went from just another service to the top priority.

Microcenter role. Given your user needs, budget constraints and the level of top management support, you are now ready to determine what you can realistically offer in the microcenter. It is better to start small and grow than try to do too much and fail outright. A written plan is needed — a charter, basically, of what the microcenter is to provide and how those services are to be delivered. Circulate this charter, plainly written, among the potential users so that everyone is clear on what is being offered.

Central location. Pick a location central to your users. You're doing this for them, remember. Put the location where everyone can see it. A favorite example of the effect a poor location can have on a microcenter is a company that took the "keep it small and out of the way" approach. It was so quiet that the people sitting across the hall didn't know where it was.

Staffing. Someone will have to manage the operation. Try to make it the responsibility of someone who really wants it and likes people. That person will need a sense of humor for a while. People who staff the center on a day-to-day basis should be relieved of outside responsibilities as soon as possible.

The staff that has direct contact with end users should be personable and have a good grasp of general business practices, if at all possible. In many cases, users will not know what they want and will need a friendly, informed person to help them. Your staff will make or break the microcenter in the eyes of your users. You cannot be too careful in selecting people.

Publicity. You are out in the real world now. You want to make people aware that you exist. You've got a spot in the main lobby; now follow through on the rest of your communications. Word of mouth is great advertising, but it takes a while. Start an interoffice mailing list announcing what you'll be doing, your hours, your phone number and all other salient facts. Advertise in your corporate newspaper.

Make your act look professional — you're competing with the Computerlands of the world. Because you are part of the company, you've got an edge — but not a captive audience. Keep in mind that you will have to sell this idea every step of the way, but the benefits can be enormous.

A microcenter can offer you and your company excellent opportunities if you plan well, focus your needs and efficiently execute your plan. The user will gain an effective and easy way to learn how to work with micros. The MIS group will develop a semblance of rationality and control over the micro environment, plus the opportunity to enhance its image with management and the user community. The company will gain a more efficient user community — resulting in higher employee productivity.

About the author

Laurie Young is president of Business Software Centers, Inc. of Lincoln, Mass., a microcomputer reseller specializing in business applications for microcomputers, including microcenters, networks and custom software.

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IN DEPTH

DOCUMENTATION: The Time-saver

Wouldn't it be terrific if new users, data entry and operations personnel could be provided one day's verbal training and then be handed up-to-date documentation answering the vast majority of their questions? Such documentation can be developed. And it can be cost-beneficial while easing worries about the potential loss of key personnel.

By Robert Delaet

Why is it that programming assignments never seem to be completed on time or within budget? Why does it always take longer to complete a program change than was estimated? Are the estimates unrealistic or are the programmers goofing off?

True, the estimates may be poor, but how can it possibly take more than eight hours to make a simple program change? And this programming staff was handpicked! These people are hardworking and aggressive, even putting in uncompensated overtime in order to get the job done. So what has the manager done wrong?

The amount of time wasted in redundant, verbal communication in the typical data processing shop is astronomical. Consider the situation of a programmer newly hired to work on a material requirements planning (MRP) system, which was developed in-house and consists of more than 1,000 programs. The programmer was hired because he had just the right background in the operating system, systems software and languages — but he knows nothing about material systems.

Except in the largest of shops, the data processing or systems and programming manager will spend a few hours with the new employee, providing a quick overview of the systems and application software.

But how will that person learn about MRP and try to comprehend what the 1,000 programs do? He will ask questions of the operations manager, data entry supervisor, programming manager, users and his fellow programmers. Many of the questions will be unanswerable, because the programmer who wrote the code quit six months ago.

Although few DP professionals will admit it, they often thrash about in programs, incorporating changes and hoping for the best. Normally, the new programmer will take three or four potshots at the program, because he's really not sure what he's doing. After six months, he will have a fairly decent appreciation of the system, but every time he receives a new assignment, there will be the same old question-and-answer game.

In the example, why didn't the newly hired programmer call his predecessor? He knows all about the system. Well, when he quit, he wouldn't tell anyone where he was going because he was tired of training new programmers and answering the same old questions.

Wouldn't it be terrific if any new user, data entry and operations personnel could walk through the door, be provided one day's verbal training and be handed up-to-date documentation that would answer most of their questions? Such documentation can be developed that will not only answer all of the questions but also be cost-beneficial and ease anxieties about the potential loss of key personnel.

Why produce documentation?

- *To communicate knowledge of the user, operational and systems and programming aspects of the system, while the knowledge is current and at a person's fingertips.* How many times have you been asked a question about a program you wrote only six months ago, and you don't have the vaguest clue what purpose that indicator or switch serves?
- *To train new user, data entry, operations or programming personnel.* How many times have managers watched the data entry supervisor train a new employee? It's conceivable that half of that individual's time is consumed by this redundant training.
- *To minimize the loss of senior staff time in constantly communicating this knowledge verbally.* Most questions a new employee will ask can be answered by adequate documentation.
- *To minimize the disruption caused by the departure of key personnel.* A programmer may have everything stored in his head. The DP manager will work 14 hours a day until he can find and train a replacement. "Why, oh why, don't I have a budget for documentation?"
- *To retain key personnel.* With documentation, their time is devoted to challenging tasks such as new systems design, hardware review, supervision and planning.
- *To virtually eliminate operation reruns.* With well-defined operations instructions, the operator will completely understand his job. Even if he leaves, his replacement will be able to come up to speed rapidly.
- *To reduce significantly the time required to complete maintenance programming.* Various studies have determined that most shops spend 70% to 80% of their time on maintenance programming. For example, a request is received to revise the calculations for computing the sales representatives' commissions, which is passed on to the programmers. How does the programmer find out (especially if he is new) what system, procedures, program(s) and portion of the program(s) are affected? Obviously, he asks the DP manager or fellow programmers, tying up their time. And, of course, they haven't worked with that system in over a year, so they hunt together.

> *With complete documentation, there is no reason a programmer cannot be at peak productivity within a month. Without that documentation, the department loses five months of productivity.*

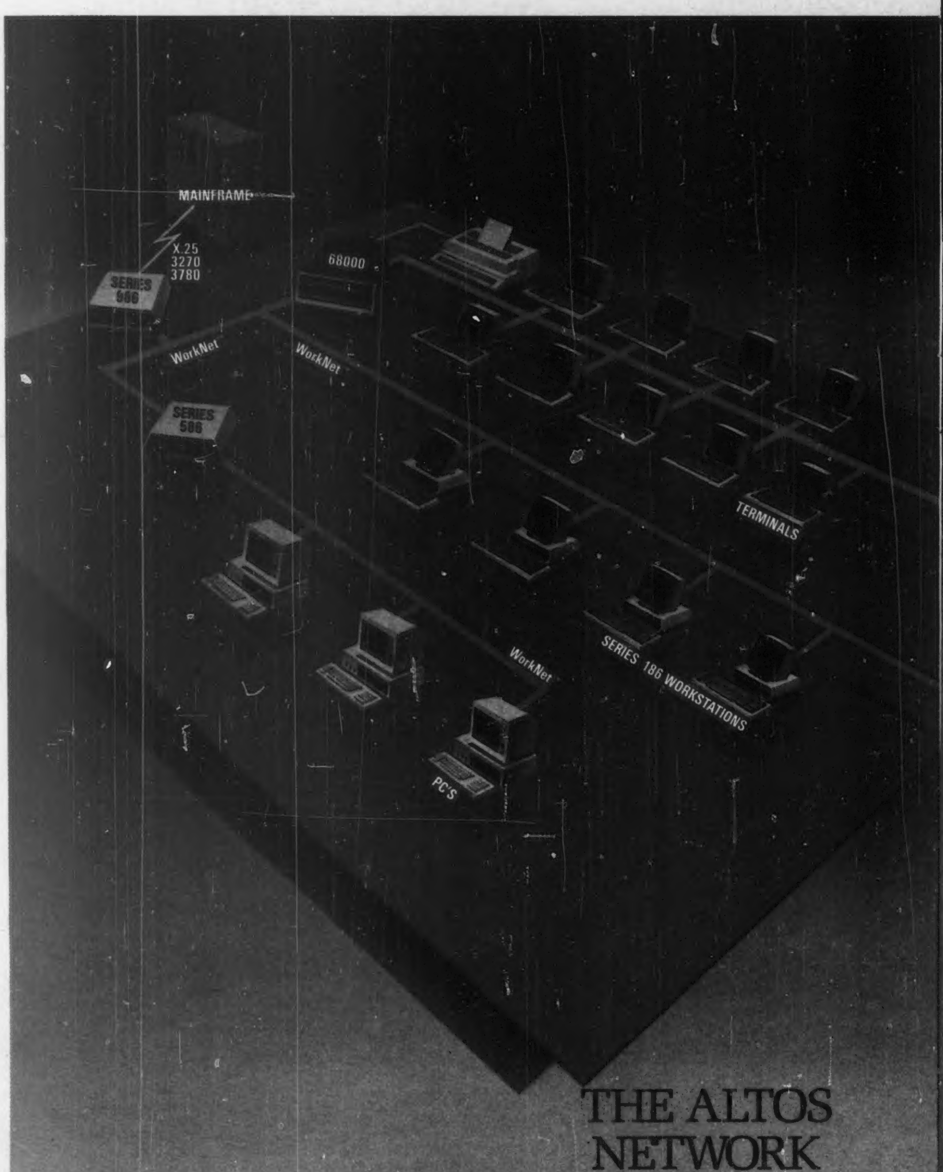
The actual program change probably takes 15 minutes, but by the time the change is actually made, 10 hours have been consumed. But there were so many people involved, no one noticed, because, "That's the way we've always done it."

Potential savings

How are new operators, data entry personnel and programmers really trained? In the most archaic method that can be devised: verbal communications. Consider the example of a newly hired programmer. During the first few days, he is told what the operating system, system software and major application systems are. The only written documentation he will find, in all likelihood, is the vendor's manuals for the hardware and system software, which he reads or skims. He now knows where he can get answers to his questions. He then spends hours with the systems and programming manager, data entry supervisor and the other programmers trying to define his environment. After six months, he has probably reached his peak productivity.

Unfortunately, based upon a recent independent survey, the average programmer changes jobs every 14 months. Therefore, we can only hope to achieve eight months of maximum productivity. Although he was seemingly productive during the first six months, he wasted (out of necessity) a considerable amount of the senior personnel's time (who, in general, are paid more than he) to gain his knowledge.

An example: Peter is hired as a programmer/analyst for $30,000 per



Generally, three categories of documentation are developed: user, operations, and systems and programming; they should be approached as three distinct elements.

year. With an average of 40% for fringe benefits, the total outlay is $42,000 per year.

Assume that the entire department, on an average, turns over every 18 months. If you have 24 employees, you will lose 16 each year.

During the first six months of employment, the new employee will consume three months of the various senior personnel's time, and three months will be spent writing programs. Therefore, three months of the programmer's time and three months of the senior personnel's time have been wasted, for a total of one-half year.

With complete documentation, there is no reason a programmer cannot be at peak productivity within a month. Without it, the department loses five months of productivity.

Multiplying the lost time within a year (5/12) times the annual salary plus fringes ($42,000) times the turnover (16) equals $280,000. Generally, this amount is equivalent to one-fourth of the departmental budget.

Even if the manager spends $200,000 the first year documenting these systems and $50,000 per year for the next four years maintaining the documentation, the net savings will still approach $1 million over a five-year life cycle.

Traditionally, documentation has been thought of in terms of only on-line user guides, input instructions or a job-run schedule. The standard programmer response is, "Everybody in data processing knows about the rest of it." Is this statement true?

A new, unsophisticated user will probably ask general questions about the computer and how it works:

How do I submit data or use this equipment on-line? What do I enter in each field? What are the rules or limitations for entering data? What happens if I press this key? What do I do if I make an error?

What is my schedule for submitting data? What reports do I get when, and what do they look like?

What data processing people do I contact to ask a question or to resolve a problem?

How do I request a new computer system or changes to an existing system? How do I request a report that is not normally scheduled (on a demand basis)?

Operator queries

Operators may ask these questions:

What processor, operating system, systems software (telecommunications monitor, data base manager), compilers (Cobol, BAL, RPG) and applications software (order entry, inventory and so on) do we have?

What systems and jobs are run, and on what schedule?

What are my daily responsibilities?

How do I start (IPL) the machine? What do I do if we lose power? Can I "warm start" or must I cold start the machine?

Do we have a tape or disk management system?

Are there any special routines or jobs that must be run at the end of my shift?

What do I do if a hardware or programming problem occurs? Whom do I call?

Where is all of the equipment located? What are the addresses? What does the telecommunications network look like?

Where do I get the job run instructions and input?

To whom and how many copies of each report do I distribute?

What are the backup and off-site storage requirements for files and libraries?

Finally, as a minimum, systems and application programmers will ask:

Why was the system "genned" (sysgen) this way? Why were the various pieces of system software selected?

What languages or utilities are available?

How do I access, edit and compile programs and create procedures?

How many systems and programs are there within each system?

What does each system and program do? What are the input and output of each program, and what processing does each perform?

How do I document programs or procedures that I develop?

Are there separate production or test libraries?

Are there specific standards established for writing programs, naming files and procedures and so on?

Depending upon your shop, there are invariably numerous other questions that may be asked by these new personnel.

What documentation?

Generally, three categories of documentation are developed: user, operations and systems and programming; they should be approached as three separate elements.

The documentation can be contained in a manual, microfiche or as an interactive display, depending upon the resources and time available.

The user should be provided with:

■ A simplified explanation of the computer, including illustrations. Included in this explanation should be an illustration of all of the processing equipment, showing how their display stations and printers tie to

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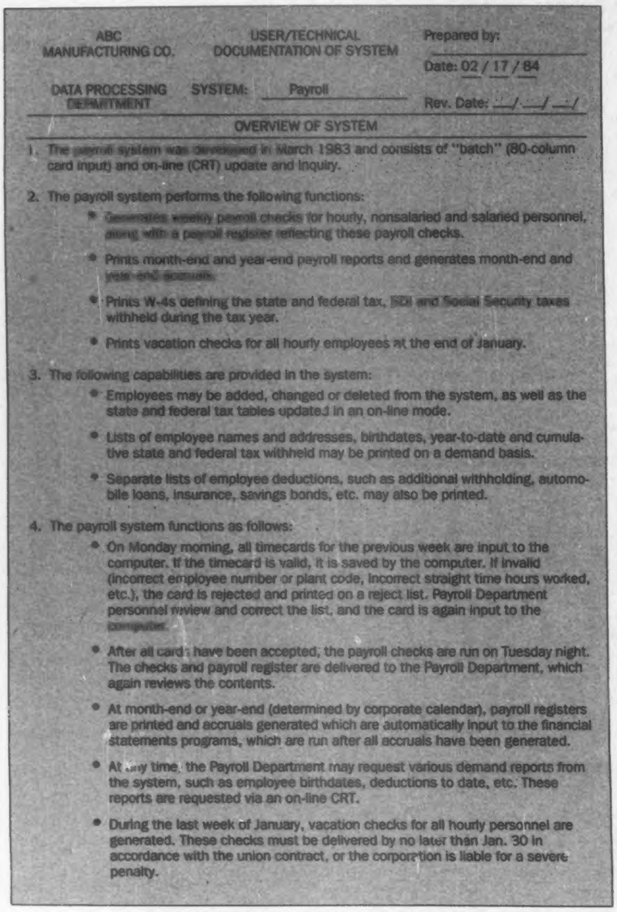

ABC
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USER/TECHNICAL
DOCUMENTATION OF SYSTEM

Prepared by: ____________

Date: 02 / 17 / 84

DATA PROCESSING
DEPARTMENT

SYSTEM: Payroll

Rev. Date: __/__/__/

OVERVIEW OF SYSTEM

1. The payroll system was developed in March 1983 and consists of "batch" (80-column card input) and on-line (CRT) update and inquiry.
2. The payroll system performs the following functions:
   - Generates weekly payroll checks for hourly, nonsalaried and salaried personnel, along with a payroll register reflecting these payroll checks.
   - Prints month-end and year-end payroll reports and generates month-end and year-end accruals.
   - Prints W-4s defining the state and federal tax, SDI and Social Security taxes withheld during the tax year.
   - Prints vacation checks for all hourly employees at the end of January.
3. The following capabilities are provided in the system:
   - Employees may be added, changed or deleted from the system, as well as the state and federal tax tables updated in an on-line mode.
   - Lists of employee names and addresses, birthdates, year-to-date and cumulative state and federal tax withheld may be printed on a demand basis.
   - Separate lists of employee deductions, such as additional withholding, automobile loans, insurance, savings bonds, etc. may also be printed.
4. The payroll system functions as follows:
   - On Monday morning, all timecards for the previous week are input to the computer. If the timecard is valid, it is saved by the computer. If invalid (incorrect employee number or plant code, incorrect straight time hours worked, etc.), the card is rejected and printed on a reject list. Payroll Department personnel review and correct the list, and the card is again input to the computer.
   - After all cards have been accepted, the payroll checks are run on Tuesday night. The checks and payroll register are delivered to the Payroll Department, which again reviews the contents.
   - At month-end or year-end (determined by corporate calendar), payroll registers are printed and accruals generated which are automatically input to the financial statements programs, which are run after all accruals have been generated.
   - At any time, the Payroll Department may request various demand reports from the system, such as employee birthdates, deductions to date, etc. These reports are requested via an on-line CRT.
   - During the last week of January, vacation checks for all hourly personnel are generated. These checks must be delivered by no later than Jan. 30 in accordance with the union contract, or the corporation is liable for a severe penalty.

Documentation for a department's functions

Too often, programmers never become aware of powerful, time-saving tools that are available on the system, unless they know enough to ask the right questions.

the CPU. In addition, an explanation of the use of the display station, if not provided with the equipment, is absolutely essential.

■ A list and definition of responsibilities of the personnel to contact in data processing to answer questions or to solve problems.

■ A list and overview (generally one or two pages) of each of the systems (in user terms), explaining its purpose, how it works and what reports or screens are available.

■ Data entry or keypunch instructions explaining how to fill in input forms for batch systems. These instructions must define the required entries, exact field positions, left or right justification, acceptable entries and sample contents of each field.

■ For an on-line system, provide a user guide that explains in layman's language the purpose of the system, how to log on, the features available (update capability, inquiry, reports), how to use the menu and the particulars of each screen — what is entered in each field, what the maximum length of a field is, what keys to press and what to do if an error occurs. Representative samples of both the filled-in input forms and screens should be provided.

■ A sample copy and purpose of each report provided by the system, with explanations of acronyms and abbreviations used in the report headings (example: CAT = Category).

■ Instructions on how to request a new system or changes to an existing system (example: data processing work request) or how to request a demand-type report. Both of these forms should be structured in administrative, not DP, terms. Do not insist that the users request a program number or title. All they should have to do is check a box and specify the optional variables, such as divisions desired, sales start and end dates and number of copies.

For operations staff

Operations personnel should be provided with the following, as a miminum:

■ An overview of the system configuration and characteristics, such as computer model, peripheral devices, local and remote controllers, terminals and printers. This is best accomplished by developing a hardware local and remote schematic that depicts all of this equipment, including dial-up telephone lines and modems.

Operations personnel should get a local and remote schematic that depicts all of the equipment, including dial-up telephone lines and modems.

■ A daily, weekly and monthly operations run schedule that defines the jobs to be run each day within either a specific time frame or in a sequence.

■ An operations run book that defines the specifics required for each job, including a flowchart or the processing (jobstream), detailed step-by-step instructions to process the job and so on; what data must be entered into the console, such as today's data, restart procedures if the job aborts and so on.

■ A report distribution list defining how many copies of the report are to be provided to each individual and routing or mailing instructions.

■ Instructions for starting up the machine, including specific operator responses to each system query.

■ Identification of backup procedures and any other utilities that are executed nightly or at the end of each shift.

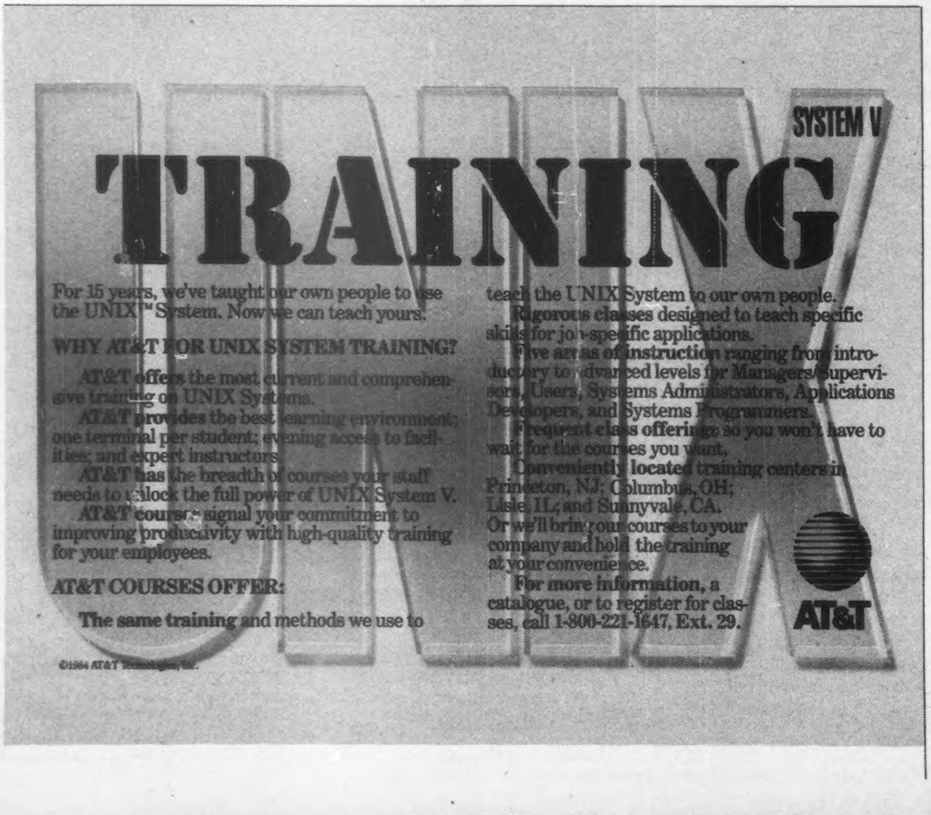
■ A list of programmers' and maintenance vendors' names and telephone numbers to be used in the event of a program abort or equipment failure.

For systems and programming

Finally, the systems and programming personnel should be provided with:

■ A list and description of the systems software, including current release, and the capabilities of each system and utility software. Too often, programmers never become aware of powerful, time-saving tools that are available on the system, unless they know enough to ask the right questions.

■ Specifics regarding the sysgen:



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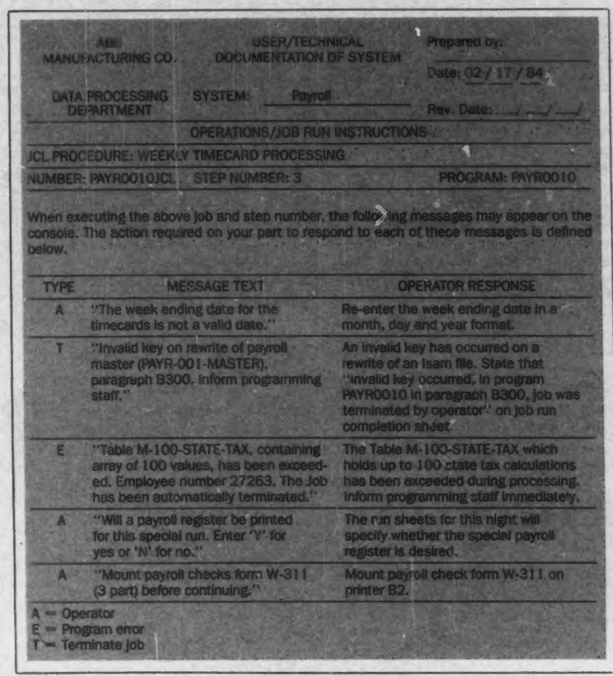


ABC MANUFACTURING CO.
USER/TECHNICAL DOCUMENTATION OF SYSTEM
Prepared by: ____
Date: 02 / 17 / 84
DATA PROCESSING DEPARTMENT
SYSTEM: Payroll
Rev. Date: __/__/__

OPERATIONS/JOB RUN INSTRUCTIONS

JCL PROCEDURE: WEEKLY TIMECARD PROCESSING

NUMBER: PAYR0010JCL STEP NUMBER: 3 PROGRAM: PAYR0010

When executing the above job and step number, the following messages may appear on the console. The action required on your part to respond to each of these messages is defined below.

TYPE	MESSAGE TEXT	OPERATOR RESPONSE
A	"The week ending date for the timecards is not a valid date."	Re-enter the week ending date in a month, day and year format.
T	"Invalid key on rewrite of payroll master (PAYR-001-MASTER), paragraph B300. Inform programming staff."	An invalid key has occurred on a rewrite of an Isam file. State that "invalid key occurred, in program PAYR0010 in paragraph B300, job was terminated by operator" on job run completion sheet.
E	"Table M-100-STATE-TAX, containing array of 100 values, has been exceeded. Employee number 27263. The Job has been automatically terminated."	The Table M-100-STATE-TAX which holds up to 100 state tax calculations has been exceeded during processing. Inform programming staff immediately.
A	"Will a payroll register be printed for this special run. Enter 'Y' for yes or 'N' for no."	The run sheets for this night will specify whether the special payroll register is desired.
A	"Mount payroll checks form W-311 (3 part) before continuing."	Mount payroll check form W-311 on printer B2.

A = Operator
E = Program error
T = Terminate job

Operations Instructions

why was the system "genned" in this way; how have the CICS tables been structured?

■ A technical overview of each system: why the system is batch or interactive, what files are used, what languages are used, what major processing is performed, what the objectives of the processing are and whether there are any unusual algorithms or calculations that need to be described.

■ A list and descriptive title of each program in the system.

■ An abstract for each program in each system, describing the specific purpose of the program, the input files and output generated (files, reports, plotter and so on) and a detailed description of the processing. Whenever a programmer has to pick up a program and incorporate changes, he must understand what the program is doing, without spending eight to 16 hours deciphering the code.

■ Layouts and a description of each file or data base and field within the file. The description should include the purpose of the file and graphic layout of each field in the file.

■ A data processing standard that defines programming, job, screen, report and file naming conventions and specific guidelines for developing programming and operations documentation.

This may seem like an enormous amount of data to be prepared. However, once you make the initial effort, the upkeep will generally require only one person. After the documentation is prepared, it should be valuable for at least five years, until you completely change all of the hardware and software to keep pace with technology.

Who will write it?

Generally, there are two approaches: 1) Let the operators and programmers write it. This won't increase the budget. 2) Hire a technical writer to do it.

Rarely do either of these choices produce satisfying results, unless your programmers or operators happen to be ex-English teachers, or the technical writer is an ex-programmer or operator.

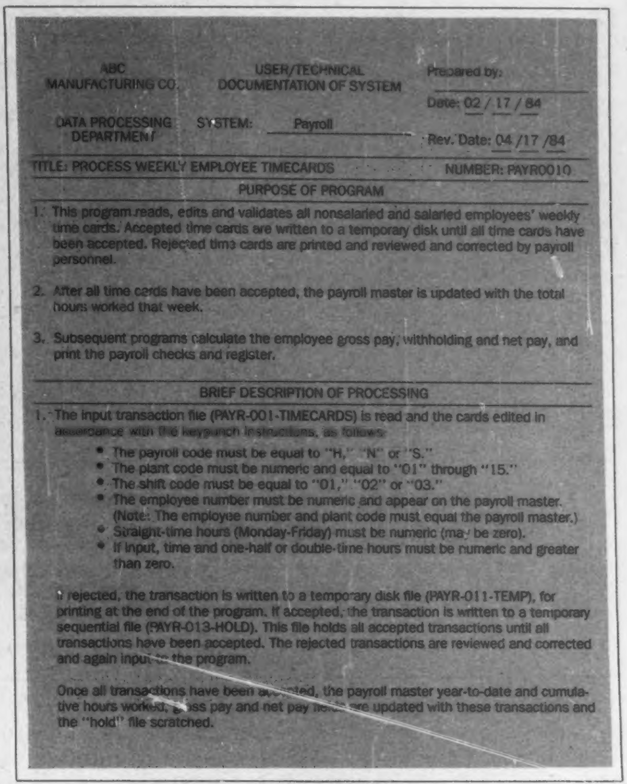
The average programmer has been educated at a trade school or college. He concentrated on absorbing as much technical knowledge of the operating system and programming languages and techniques as possible. Although the trade schools emphasize the need for documentation, there is barely enough time to provide education in the fundamentals of the particular machine and software. The glamorous portion of the job is analyzing, designing and coding end-user applications, and invariably almost all programmers despise the thought of writing about the system. Documentation just isn't interesting to them, although they would love to have it.

> *Documentation should be generated when all of the design philosophy and program peculiarities are fresh in the developer's mind.*

Let programmers do what they do best — program.

The technical writer is generally firmly in command of the English language, well-organized and superior at presentation skills. However, rarely can technical writers comprehend fully what the systems or application programmer or operator is talking about, unless they have a background in data processing.

When dealing with the instructions for assembling a printer or a user guide for an on-line system, the



ABC MANUFACTURING CO.
USER/TECHNICAL DOCUMENTATION OF SYSTEM
Prepared by: ____
Date: 02 / 17 / 84
DATA PROCESSING DEPARTMENT
SYSTEM: Payroll
Rev. Date: 04 /17 /84

TITLE: PROCESS WEEKLY EMPLOYEE TIMECARDS NUMBER: PAYR0010

PURPOSE OF PROGRAM

1. This program reads, edits and validates all nonsalaried and salaried employees' weekly time cards. Accepted time cards are written to a temporary disk until all time cards have been accepted. Rejected time cards are printed and reviewed and corrected by payroll personnel.

2. After all time cards have been accepted, the payroll master is updated with the total hours worked that week.

3. Subsequent programs calculate the employee gross pay, withholding and net pay, and print the payroll checks and register.

BRIEF DESCRIPTION OF PROCESSING

1. The input transaction file (PAYR-001-TIMECARDS) is read and the cards edited in accordance with the keypunch instructions, as follows:
   - The payroll code must be equal to "H," "N" or "S."
   - The plant code must be numeric and equal to "01" through "15."
   - The shift code must be equal to "01," "02" or "03."
   - The employee number must be numeric and appear on the payroll master. (Note: The employee number and plant code must equal the payroll master.)
   - Straight-time hours (Monday-Friday) must be numeric (may be zero).
   - If input, time and one-half or double-time hours must be numeric and greater than zero.

If rejected, the transaction is written to a temporary disk file (PAYR-011-TEMP), for printing at the end of the program. If accepted, the transaction is written to a temporary sequential file (PAYR-013-HOLD). This file holds all accepted transactions until all transactions have been accepted. The rejected transactions are reviewed and corrected and again input to the program.

Once all transactions have been accepted, the payroll master year-to-date and cumulative hours worked, gross pay and net pay fields are updated with these transactions and the "hold" file scratched.

Program description

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technical writer can visualize the product in front of him. However, it is extremely difficult to visualize a sysgen with no prior experience. Can you imagine trying to explain a sysgen to a writer? After three hours of frustrating explanations, you may realize that if you were able to write well, you could have completed the instructions yourself in two hours.

Automated documentation packages can provide very beneficial tools, such as screen layouts or file vs. field cross-reference matrices, that will supplement the documentation that has been developed.

The only practical, beneficial way to document systems is to use specialists who are skilled in all aspects of data processing, who understand the users' viewpoint and their needs and can develop well organized documentation. They can present sophisticated information in clear and concise terms that all user and data processing personnel can quickly grasp. Generally, these specialists are engaged as outside consultants and cover a broad range of hardware, operating systems and languages.

The best time

In general, documentation can be developed as an integral part of the system design, during program development and testing or after the system is complete.

If the documentation is developed at the same time as the system specifications, the documentation itself becomes an integral part of the specifications. However, all changes that may occur as the design and programming progresses must be reflected in the documentation. You may revise the documentation 15 to 20 times before it is complete.

If the documentation is produced as programs are developed and tested, the risk of major revisions is minimal. However, in many cases, the development of the user guides, data entry instructions or operations instructions may cause changes to the design and programs, if the design has not been well thought out.

The worst possible time to document systems is after they are complete. The documentation should be generated when all of the design philosophy and program peculiarities are fresh in the developer's mind. Even after a few months, many of the specific details of the system will be forgotten. In addition, user demands on your resources will generally negate the possibility of the documentation ever being completed.

The systems may be documented as a part of the design specifications or during design development. Generally, documentation that has been prepared during design is subject to less change and is more accurate.

If a shop had no documentation for its existing systems, it would be very difficult to develop the detailed programming documentation after the fact. The time and effort would not be worth the investment. However, an overview of each system and brief description of each program is still worthwhile. Also, if there are slack times for programmers or operators, managers can develop a schedule for documenting the critical applications. Any time a program must be substantially modified, it is wise to spend the few hours necessary to document the program.

Comprehensive, intelligently developed documentation can be a lifesaver and provide substantial cost and psychological benefits. Management will not lose sleep for fear that its prima donna will run off to Tahiti for a six-month sabbatical. The auditors will have access to the data they need to conduct their audit thoroughly, with only minimal interference to the staff.

Finally, when the DP manager moves on, he can feel confident that he leaves behind a well organized, controlled environment.

About the author

Robert Delaet is senior partner at Marina Information Systems, a consulting service in Marina Del Rey, Calif.

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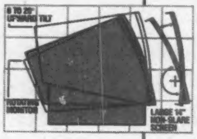

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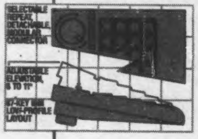
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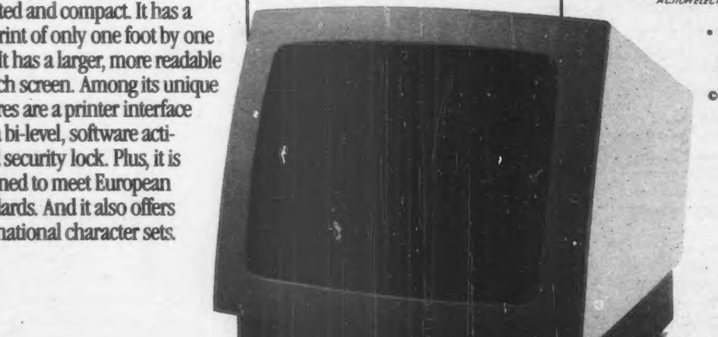

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COMMUNICATIONS

Congress not buying FCC's $2 users access fee

CW AT IDC
Phil Hirsch
CW Washington Bureau

MIAMI — The Federal Communications Commission's proposed $2-per-month residential and single-line business phone users access fee is in trouble and may ultimately affect the access fees business users pay, according to speakers at a communications seminar here sponsored by International Data Corp. (IDC), a Framingham, Mass.-based research firm.

According to Dr. Alan Pearce, the FCC's access charge may not see the light of day as proposed. Pearce is a private consultant and former chief economist for both the FCC and the U.S. House of Representatives' telecommunications subcommittee.

He explained that early this year, in response to spirited opposition from Congress, state regulators and public interest groups, the FCC deferred the $2 surcharge.

Monthly surcharge reduced to $1

Pearce reported that the U.S. Telephone Association, whose members include major independent telephone companies and the divested Bell operating companies, has decided to reduce the surcharge to $1 per month.

"They hope that by reducing the amount, they can establish the principle of charging residential- and single-line business users for access," Pearce explained.

"The result, however, is that multiline business users will have to continue paying more than their fair share of access costs," he added. The speaker also pointed out that there is no guarantee Congress and the other critics will accept a $1 per month surcharge.

In a luncheon address, attorney Richard Wiley, former chief of the FCC, expressed similar thoughts. He said that when the access line charge was unveiled by the FCC in December 1982, it was

See **FEE** page 74

Cost overshadows benefits in weighing value of nets

By Phil Hirsch
CW Washington Bureau

MIAMI — Few companies consider the actual dollar value of enhanced communications networks, leaving their analysis of network alternatives shortsighted.

So claimed Dr. Howard Frank, a networking consultant and president of Contel Information Systems, Inc. of Great Neck, N.Y., who spoke here at the recent communications seminar sponsored by International Data Corp. (IDC), a research firm based in Framingham, Mass.

Frank said that in most companies, because of divided responsibilities and differing departmental goals, network alter-

See **NETS** page 74

Key strategic elements in AT&T future discussed

MIAMI — The future of AT&T Communications will be guided by six key technologies. These include common channel interoffice signaling (CCIS), customer-controlled reconfiguration capability (CCR), intelligent systems, digitized voice transmission with low bit rates and wideband transmission facilities with higher capacities.

The first of the six technologies, CCIS, is already widely deployed, Louis C. Golm, director of marketing and strategic planning for AT&T Communications told attendees at a communications seminar conducted here recently by Framingham, Mass.-based International Data Corp.

Essentially, CCIS is a packet-switching system that estab-

See **AT&T** page 73

■ Fotec, Inc. has announced a fiber-optic test kit for long-wave and single-mode fibers/**70**

■ Intelligent Technologies International Corp. has announced the Coax Exchange, said to enable the IBM Personal Computer to emulate IBM 3278/9 terminals/**70**

■ Digital Controls Corp. has introduced a programmable emulator that allows nonintelligent NCR Corp. terminals to exist in a polled environment/**72**

INSIDE

GE division targets commercial tenant services mart

By Charles Babcock
CW New York Bureau

NEW YORK — General Electric Information Services Co. (Geisco), a computer services company, announced here recently that it will enter the tenant service business to provide information management and telecommunications services in commercial office buildings.

As part of its tenant services business, Geisco announced new business relationships with MCI Communications Corp., which will provide long-distance telephone services; Wang Laboratories, Inc., which will supply office information processing systems; and Intecom, Inc., a manufacturer of voice/data private branch exchanges (PBX).

Geisco said it hopes to install its tenant service package in buildings with a minimum area of 400,000 square feet. The products and services can then be offered to tenants of the buildings on a pay-by-use basis.

With the basic telephone service, tenants will be able to share a building's Intecom PBX, obviating the need for customers to buy and maintain their own switches.

Additionally, tenants will be able to tap other Geisco computing services, including Marknet, its value-added network service; Professional Services, which provides software design and consulting services; and the Quick-Comm electronic mail service. Through the MCI relationship, tenants will be able to access discount long-distance services.

As part of its approach to tenant services, GE will offer employee training on the equipment the tenant leases and will staff each building with a full-time manager, the company reported.

More information is available from Geisco at 401 N. Washington St., Rockville, Md. 20850.

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Mark Klein, Fall 1984 BYTE Guide to the IBM PC

"The POPCOM works well with practically any data communications program — from the simplest to the most complex."
Frank J. Derfler, Jr., August 21, 1984, PC MAGAZINE

"This modem offers extra features for 20% less than a Hayes Smartmodem 1200."
Steven Satchell, July 23, 1984, Info World

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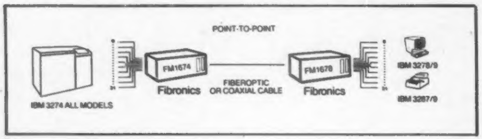

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China Computerworld

The only specialized computer publication written exclusively for the People's Republic of China (PRC).

The PRC is a huge country which now has a rapidly growing installed base of computers. Government plans call for extensive use of computers in the PRC's technological modernization and annual EDP expenditures are expected to grow into the billions of dollars through the 1980's.

A good deal of this money will be spent on foreign computer equipment. The purchase decision makers for this equipment will be using *China Computerworld* to help them choose the products and the companies they need.

China Computerworld is a joint venture of the Ministry of Electronics and Computers and CW Communications/Inc. It has a total paid circulation of 35,000. An additional 50,000 copies are distributed throughout all provinces in the PRC and pass-along readership is over 500,000. *China Computerworld* readers include the key government officials and computer managers who have EDP purchase decision authority.

China Computerworld is a newspaper published twice a month on the eighth and the twenty-third. Its tabloid format and pertinent editorial offers you a unique vehicle in which to introduce your products and services.

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COMMUNICATIONS

VOICE/DATA COMMUNICATIONS

ANDERSON JACOBSON, INC.
IOX Integrated Office Exchange

Anderson Jacobson, Inc. has announced the IOX Integrated Office Exchange private branch exchange (PBX).

Based on a 16-bit multimicroprocessor architecture, IOX is said to be modularly expandable from 100 to more than 24,000 lines.

The system includes support for standard analog telephones, IOX proprietary digital telephones, attendant console with 12-in. video display and a digital switch processor.

A data option board with standard RS-232C interface can be added to the digital telephones, the firm said. The system reportedly supports both asynchronous and synchronous data communications at standard rates from 110 to 19.2K bit/sec.

Price of the product ranges from $400 to $700, depending on number of telesets provided.

Anderson Jacobson, 521 Charcot Ave., San Jose, Calif. 95131.

PROTOCOL CONVERTERS

LOCAL DATA, INC.
Versalynx/3278

Local Data, Inc. has announced the Versalynx/3278 protocol converter, enabling IBM 3178 and 3278 display stations to appear as asynchronous Ascii terminals.

Possible applications would be to gain access to dial-up news and information services.

The Versalynx/3278 is $695.

Local Data, 2771 Toledo St., Torrance, Calif. 90503.

MULTIPLEXERS/ MODEMS

ASTROCOM CORP.
Fiber-optic Sqeeziplexer multiplexer

Astrocom Corp. has announced a fiber-optic capability for its Squeeziplexer multiplexer line that can be used to support an IBM 3274 controller and its 32 display stations.

The fiber-optic Squeeziplexer is rack-mounted and can be configured to support eight, 16, 24 or 32 devices in a point-to-point connection, the company reported. The product line is said to feature self-monitoring indicators permitting easy identification of a terminal not responding to communication, the company said.

The 32-port version costs $3,568; the 24-port version, $3,240; the 16-port version, $2,912; and the eight-port version, $2,584.

Astrocom, 120 W. Plato Blvd., St. Paul, Minn. 55107.

NETWORK SERVICES

SATELLITE BUSINESS SYSTEMS
T1 option

Satellite Business Systems (SBS) has announced a T1 option for its SBS Skyline Wats customers.

With the option, users can have their local phone company install a 1.5M bit/sec transmission facility between their building and the nearest SBS Skyline switching center, providing the equivalent of at least 24 64K bit/sec channels. SBS will charge $528/mo for a T1 interface compared with $2,064 monthly to terminate 24 lines at the single-line access rate plus a pass-through charge.

SBS, 8283 Greensboro Drive, McLean, Va. 22102.

TEST EQUIPMENT

FOTEC, INC.
Fiber-optic test kit

Fotec, Inc. has announced a fiber-optic test kit with interface options that make it compatible with most fiber-optic systems, including long-wave and single-mode fibers.

The test kit reportedly includes an optical power meter, a fiber-optic source, adapters for the fiber-optic connectors used, a short test cable, a microscope for examining fiber-optic connectors, a testing guide and optional attenuators for margin testing. Prices start at about $1,000.

Fotec, 560 Harrison Ave., Boston, Mass. 02118.

AUXILIARY EQUIPMENT

INTELLIGENT TECHNOLOGIES INTERNATIONAL CORP.
Coax Exchange

Intelligent Technologies International Corp. has announced the Coax Exchange, which reportedly enables the IBM Personal Computer and its compatibles to emulate an IBM 3278/9 terminal in mainframe environments, including IBM IMS, VM/CMS, MVS/TSO, CICS and IDMS.

The package includes a printed-circuit board that provides a coaxial cable port for connection to an IBM 3274 or 3276 cluster controller. The required software is loaded from a diskette. It costs $1,195.

Intelligent Technologies, 151 University Ave., Palo Alto, Calif. 94301.

TRI-DATA CORP.
OZ Guardian Plus

Tri-Data Corp. has announced an enhanced version of OZ Guardian Plus, a dial-back security device that operates at speeds of 110, 300 and 1,200 bit/sec in half and full duplex.

OZ Guardian Plus reportedly can monitor incoming calls and will automatically alert a predesignated number about an attempted break-in after several invalid passwords have been received. It is available in both rack-mount and desktop versions.

Either version is $750/unit.

Tri-Data, 505 E. Middlefield Road, Mountain View, Calif. 94039

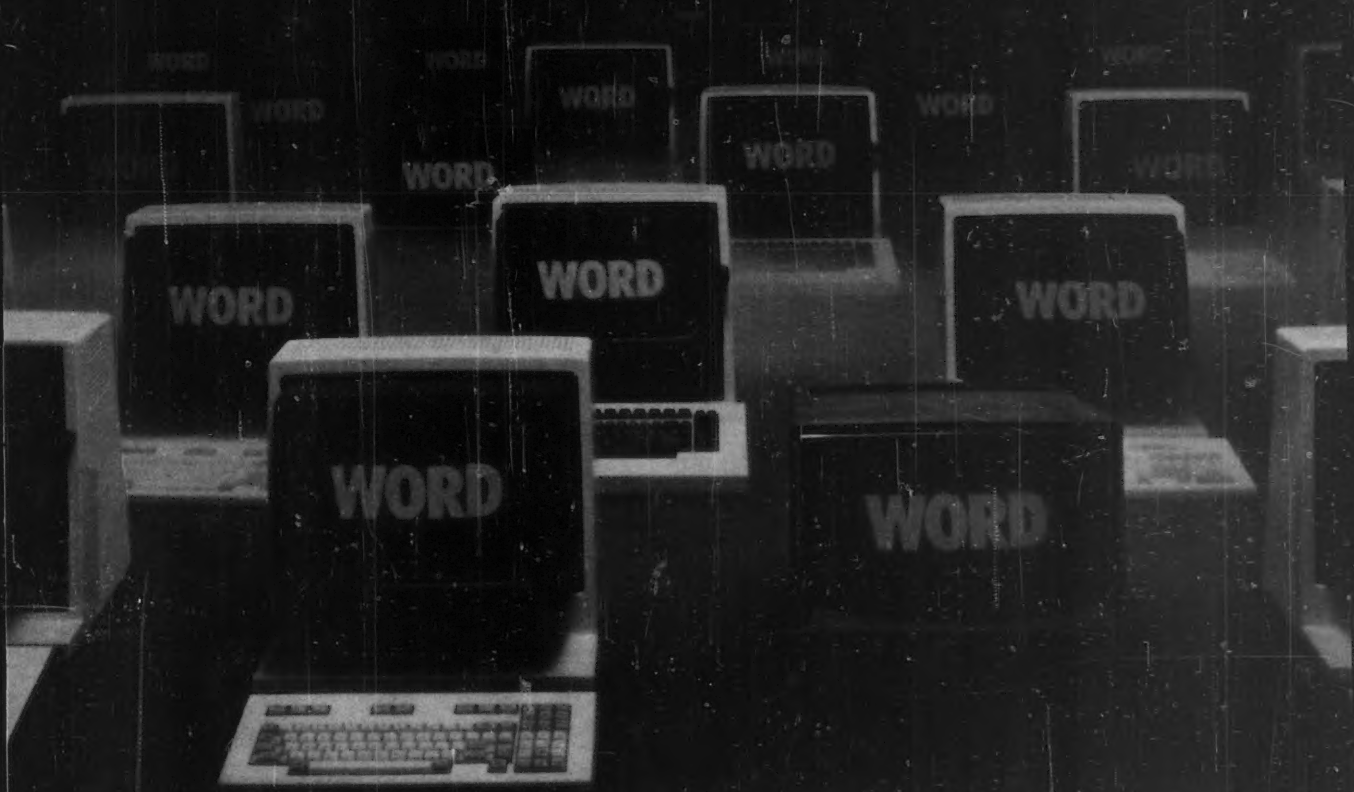
NETWORK SOFTWARE ASSOCIATES, INC.
Adaptsna Printer

Network Software Associates, Inc. has announced a printer emulator that works in conjunction with the company's Adaptsna 3270 emulator products.

With Adaptsna Printer, a printer attached to an IBM Personal Computer can emulate an IBM 3286 or 3287

Continued on page 72

THE AT&T FAMILY OF DATASPEED TERMINALS. WE SPREAD THE WORD.



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The DATASPEED 4410, 4415, 4420 and 4430 are asynchronous desk-top workstations with superior features and functionality.

The 4410 is a conversational terminal with graphics and sophisticated display capabilities. The 4430 is also conversational, suitable for the multipoint, private line environment.

If you need editing terminals, the 4415 is one of the most functional in its class. The 4420 is feature-rich, engineered to help the non-technical user become proficient quickly.

Synchronous terminals on speaking terms with IBM.

The DATASPEED 4540, Enhanced 4540 and 4540 Touch Screen Terminals are designed for a clustered, polled environment. They're compact, modular and 3270 compatible.

The 4540 and Touch Screen 4540 support SDLC/BSC line protocols. With one of our new controllers, you can upgrade to SNA by simply changing a diskette.

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Our DATASPEED 4000 Terminals incorporate Information Systems Architecture, the design principle that integrates our products so they perform as one system. As you grow, its flexibility allows for easy system expansion.

To learn how our family of DATASPEED Terminals can increase your productivity, call 1-800-247-1212, Ext. 329.

WHEN YOU'VE GOT TO BE RIGHT.

AT&T
Information Systems

Continued from page 70

printer. The emulator program runs in conjunction with the vendor's Adaptsna 3270 program on an IBM Personal Computer or Personal Computer XT; it is compatible with PC-DOS 2.0, IBM's Synchronous Data Link Control card, monochrome or color graphics card and parallel or serial printers.

Adaptsna Printer with Adaptsna 3270 costs $320.

Network Software Associates, 19491 Sierra Soto, Irvine, Calif. 92715.

AUXILIARY EQUIPMENT

FISCHER-INNIS SYSTEMS CORP.

Electronic Mail Communication Center System

Fischer-Innis Systems Corp. has announced an enhancement of its Electronic Mail Communication Center System, or Emc2, an electronic mail package for IBM TSO, CICS and CMS environments.

According to the vendor, Emc2 can now interface with IBM's ACF/Vtam environment.

Other new features are said to include an appointment calendar and a things-to-do list. A zoom-in feature is reportedly provided to let users see complete details of a day's schedule at the touch of a key.

Emc2 may be leased for either $500/mo or $800/mo, depending on the operating system used.

Fischer-Innis Systems, 4175 Merchantile Ave., Naples, Fla. 33942.

DIGITAL CONTROLS CORP.

9404 Programmable Asynchronous Communications Emulator

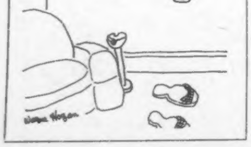
Digital Controls Corp. has introduced its 9404 Programmable Asynchronous Communications Emulator (Pace) that reportedly allows nonintelligent NCR Corp. terminals to exist in a polled environment.

The 9404 reportedly offers the function of the NCR 7900-3 keyboard on teletypewriter-type terminals. The terminals may be used inhouse, on a local data communications circuit or on a remote data communications circuit, Digital Controls said.

The 9404 reportedly also allows polled or slave printers to be connected to any of its ports. Slave printers can use the unit's capacity to dynamically allocate the next available printer to handle any terminal's print command, the company said.

The 9404 is priced at $1,850.

Digital Controls, 2779 Orchard Run Road, Dayton, Ohio 45449.



DATA GENERAL CORP.

RS-422 support

Data General Corp. has announced that its IAC/8 and IAC/16 intelligent asynchronous controllers now support the RS-422 interface.

The IAC/8 and IAC/16 provide support for eight or 16 communications lines on one 15-in. board.

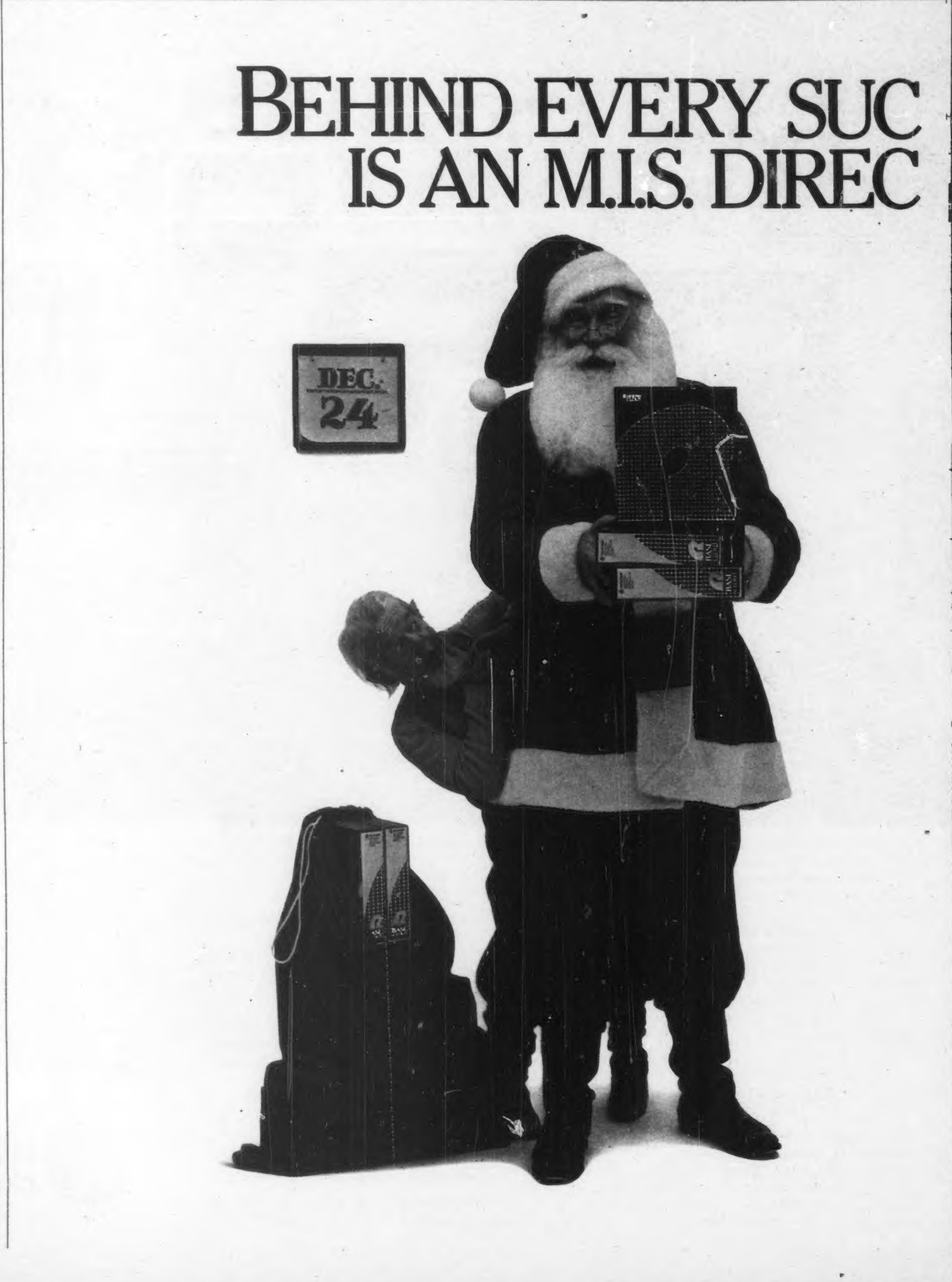
The IAC/8 is available with the RS-232C interface, or with the combination of RS-232C and RS-422 interfaces, the vendor said.

According to DG, the interface enables line speeds of 9,600 bit/sec over a direct connection between a peripheral and its host. The RS-422 connection is said to ensure low susceptibility to noise and low electromagnetic interference and can be incorporated into a network using RS-232C-compatible terminals.

Supported under DG's Advanced Operating Systems, AOS/RT32 and AOS/Virtual Storage software, the IACs are hardware-compatible with DG's Eclipse S/120, Eclipse S/140 and Eclipse S/280 minicomputers and the Eclipse MV supermini computer.

The IAC/8 with the RS-422 option is priced at $4,000. The IAC/16 offering the RS-422 option is priced at $4,500.

Data General Information Systems Division, 4400 Computer Drive, Westboro, Mass. 01581.



AT&T

from page 69

lishes paths that circuit-switched messages follow through the network; it also allows use of software-based routing and message handling instructions provided by the customer. This latter capability is the one AT&T intends to exploit heavily, Golm indicated.

One example of how it is currently being used, he said, is AT&T's Advanced 800 service. This service allows a customer to have incoming Wats calls shifted at specified times to different locations.

The instructions supporting the Advanced 800 service, after being received from the customer, are stored within a network control point — an on-line computer accessed through CCIS whenever an Advanced 800 call comes in. A similar system will support CCR and what Golm called intelligent systems. The latter offering may turn out to be particularly significant for corporate communications users.

Software networking capability

The first application of the intelligent system concept, called software networking capability, is scheduled to be tariffed during the first quarter of next year. A customer will lease private lines in the usual way, but the physical links constituting the message path will be provided as needed by the network's computers.

The advantage of this arrangement, Golm explained, is primarily monetary. He said it would be difficult to predict precisely the amount of savings to the user, but estimated it would be approximately 10% when compared with present full-period rates for equivalent leased lines.

The new service, which is to be priced on the basis of usage-sensitive rates, will be more economical, he noted, because it will provide what amounts to a dedicated service using shared circuit links. Higher utilization will lower the price for each user.

M-44 enhancement

Other key technologies — low bit-rate voice service and higher capacity transmission systems — are exemplified by the M-44 enhancement, Golm said. This enhancement to the Accunet 1.5 service allows 44 voice channels to be carried by a standard T1 circuit by digitizing voice at 32K bit/sec instead of the usual 64K bit/sec.

AT&T's present single mode optical fiber carries billions of bits per second, Golm reported, adding that the company is now working on improvements that will raise this to "millions of billions of bits per second."

The ultimate goal of these developments is a network accessible through 1.5M bit/sec or higher speed local loops connecting the user to a service node linked to a host of network services.

The ultimate goal of these developments is a network accessible through 1.5M bit/sec or higher speed local loops connecting the user to a service node linked to a host of network services, including voice services, packet-switched data transmission, circuit-switched data transmission, videoteleconferencing and other specialized networks. Through software control, all circuit reconfiguration and protocol conversion functions will be performed within the center without involving the customer. The service center will also provide custom testing services end-to-end.

Golm did not indicate when this service center would be available, but from what he did say it is clear that AT&T plans to have at least three of the key elements, including CCR, software network compatibility and network-provided testing capability, in operation by early next year.

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COMMUNICATIONS

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• ADVERTISEMENT • ADVERTISEMENT •

NETS

from page 69

natives are usually compared simply on a cost basis rather than on the increased productivity they generate for user departments. Frank suggested that if these factors were given greater weight, expensive network options might turn out to be considerably more economical.

Frank also argued that although Integrated Services Digital Networks (ISDN) promise to be more cost-effective than today's separate systems, particularly for data transmission, the limited number of systems designers and managers with experience in implementing such systems may delay the deployment of ISDNs.

In his talk, entitled "Technology Trade-offs," Frank discussed a way of comparing telephone-company-provided facilities to customer-provided twisted pair, microwave and fiber-optic cable for transmission of voice-grade traffic. He said that, generally, the choice depends on distance and traffic load. For 10 circuits or less, the telephone network is cheapest at any distance. Between 10 and 50 circuits, twisted pair is cost-effective up to 4 kilometers, while microwave is best beyond that point. For heavy loads over short distances — more than 50 voice-grade circuits under 2 kilometers — optical fiber is better than microwave.

Robert Casale, recently appointed president of AT&T Information Systems, was the seminar's keynote speaker. Like Frank, he thought that integration is a major goal of communications system suppliers, one that will eventually benefit users. But Casale indicated that the pacing factor in the development of ISDN is the development of standards rather than the supply of adequately trained system developers and managers.

Although many network standards have been developed already, they relate to physical interfaces and architecture. What is needed are application-level standards enabling terminals, hosts and network servers of different makes to exchange fully both text and associated control codes in a way that is transparent to the end user, Casale said. This is an area "where we hope to play a key role," he said.

FEE

from page 69

based on a six-year scale, whereby users would pay a lower fee per line each successive year. This was intended to minimize bypass. Meanwhile, to fill the resultant revenue gap, residential access line charges were to be increased.

Phase in full charge

Wiley said that, in addition to reducing the residential/single-line business surcharge below $2 per month, the commission is likely to phase in the full charge over more than six years.

The attorney also suggested that the FCC's recent resale decision, allowing AT&T Information Services to repackage and resell basic communications services obtained from AT&T Communications, was a mistake. The resale decision, along with another one allowing AT&T Communications to offer Accunet Packet Service, loosens many of the regulatory restraints.

This is happening at the same time the commission is conducting a long-term inquiry into whether AT&T should be deregulated. AT&T's competitors are participating in that inquiry. Wiley said the resale and Accunet decisions may limit the usefulness of the inquiry and prejudge its outcome.

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SYSTEMS & PERIPHERALS

IBM micros gain pathway to System/34, 36, 38 minis

By John Desmond
CW Staff

RYE BROOK, N.Y. — Among a spate of product and software unveilings last week, IBM announced the Enhanced Display Station Emulation Adapter for attaching IBM microcomputers to the System/34, 36 and 38, a doubling of disk and storage capacity for the 8150 CPU, an impact matrix printer for the System/36 and System/38 and color display consoles for the 4361 and 4381 CPUs.

The Emulation Adapter is a printed-circuit card that is installed in an IBM Personal Computer expansion slot. Connection to the host is via twisted-pair cable or twin-axial cable. The product is intended to operate with the Enhanced 5250 Emulation program, which is said to allow the IBM Personal Computer to emulate a 5250 workstation. The price of the Emulation Adapter card, scheduled to be shipped in April 1985, is $680, and the price of a 5250 emulation installation kit is $995, according to IBM.

The Personal Computer can also be remotely attached to the System/34 or System/38 via the 5294 remote control unit. IBM also announced enhancements to the 5294 that provide text functions to complement host-based programs and that allow transmission speeds of up to 19.2K bit/sec. The cost of the enhancement is $350.

The 8150 CPUs now support up to 8M bytes of real storage and more than 2G bytes of Dasd capacity. The 8150 Model A supports up to 4M bytes and the Model B up to 8M bytes of real storage. IBM also announced that 8150 CPUs running DPPX/SP Release 2 can support up to eight storage and I/O units, and 8150s running DPCX Release 5 can support up to six such units. The 8100 information system previously supported a maximum of four storage and I/O units.

The enhanced 8150 models and field upgrade kits for existing models are scheduled for shipment in March 1985. The price for the 8150 Model A40 is $97,500, and the price for the Model B80 is $160,000, IBM said. The price for an upgrade from a Model A30 to A40 is $7,500, and the price for an upgrade from Model B60 to B80 is $15,000, IBM said.

The 4214 Model 2 printer announced by IBM is an impact serial

See **DEBUTS** page 81

HARD TALK
Tom Henkel
CW Senior Editor

IBM bowing to pressure of scientific market?

National Advanced Systems, Inc.'s and Amdahl Corp.'s recent agreements to market Japanese-made supercomputers domestically raises the question of whether IBM will face increased pressure to get back into the large-scale scientific processing arena. In fact, the increased number of scientific-oriented systems on the market seems to be putting almost universal pressure on IBM to offer more scientific systems.

Traditionally, IBM has been more devoted to commercial, rather than scientific processing. While that devotion certainly does not mean IBM has ignored the scientific community, much more of IBM's massive R&D budget goes to commercial rather than scientific products. However, in spite of that commercial orientation, many large IBM mainframes demonstrate impressive scientific performance figures, and IBM has a faithful following of scientific users.

In its early days, IBM had a heavier interest in scientific processing than it does today. One of the company's first computer systems, the 701, was a

See **IBM** page 80

- Cadnetix Corp. has announced three workstations for printed circuit board design/**76**
- Honeywell, Inc. revealed a TDC 3000 process management system for use in the pharmaceutical industry/**76**

INSIDE

Convex unveils Unix-based scientific processing system

By Tom Henkel
CW Staff

RICHARDSON, Texas — Convex Corp., a two-year-old start-up firm, has unveiled a stand-alone scientific processor that employs a 64-bit architecture said to be capable of executing both scalar and vector calculations.

The firm's first product, the C-1 system, reportedly employs an architecture similar to Cray Research, Inc.'s Cray-1 supercomputer. Aimed at sophisticated scientific applications like modeling, simulation and computer-aided design, Convex's system targets two primary markets: organizations currently leasing supercomputer time for large-scale scientific applications and firms performing scientific processing on a high-end superminicomputer, such as a Digital Equipment Corp. VAX-11/780 or a Data General Corp. MV series processor.

Priced at $495,000, the C-1 is said to have a peak performance of approximately 60 million floating-point operations per second. According to Convex President Robert J. Paluck, the system is capable of executing scalar calculations approximately four times faster than the VAX-11/780. Paluck added that with some applications using a combination of scalar and vector calculations, such as a series of algorithms developed by Lawrence Livermore Laboratories in Livermore, Calif., the C-1 is capable of operating between 20 and 25 times faster than the

See **C-1** page 81

CAD/CAM-designed soles help running shoes go the distance

By John Desmond
CW Staff

EXETER, N.H. — The sole of the running shoes Carl Lewis wore when winning four gold medals and Joan Benoit wore when winning the women's marathon at the 1984 Olympics in Los Angeles were designed by a computer-aided design and manufacturing (CAD/CAM) system.

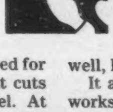
The soles were designed at the Nike, Inc. Research and Development Laboratory here on a system based on a Data General Corp. Eclipse MV/8000 processor and a McDonnell Douglas Automation Co. (McAuto) Unigraphics design station.

Nike, named after the Greek winged goddess of victory, is said to be the largest supplier of athletic footwear in the U.S. The R&D lab was attracted to a CAD/CAM system in 1978 when it was having trouble getting molds for shoe soles completed on time, according to Rob Peterson, CAD/CAM system manager. The DG system was chosen after the company hired a person with a combined computer and machine shop background who had worked with McAuto products, Peterson said.

The lab first acquired a DG Eclipse S/230 and three workstations, but more power was needed in 1982, so the company acquired an MV/8000 with 2M bytes of memory and two 196M-byte disk drives supporting eight workstations. The system runs DG's AOS/VS operating system.

Why is it important to use computers to design sneakers? Although designers still do conceptual drawings for mid-sole and outsole design by hand, "The computer is more like an electronic drafting board. Every time you would reach for a tool, you have a button instead," Peterson said. The system helps designers manipulate drawings and, in many cases, speed the design process, he said. While the computer does not result in significant innovations in the final product, the quality of molds has been improved by the CAD/CAM system, Peterson said.

For example, some designs are graded up and down for different shoe sizes. The computer automatically shrinks or stretches the design, while the workstation operators adjust the waffles, or rubber grids, on the bottom of the shoe. The CAD/CAM system can cut the grading task from a one-week to a two-hour job, Peterson said.



Once completed on the system, the design has to be prepared for running a milling machine that cuts molds from aluminum or steel. At this stage, "A programmer has to figure out where the tool has to move and the language involved to have a machine tool cut the design to specifications — that's the CAM part," Peterson said. A file containing instructions telling the milling machine where to cut is either loaded onto the memory of a terminal connected to the machine or punched onto paper tape. The company has three milling machines; two run off terminals and one runs off paper tape.

The company has been satisfied with the CAD/CAM system, and Peterson said the systems has experienced only minor problems. The company has plans to expand into designing the rigid form around the shoe and the uppers above the sole on the CAD/CAM system as well, Peterson said.

It also plans to add McAuto color workstations to the design shop for enhanced highlighting of displays, he said.

Cadnetix adds CAD workstations to CDX terminal line

BOULDER, Colo. — Cadnetix Corp. has announced three workstations for computer-aided printed-circuit board design.

The units are based on Motorola, Inc.'s 68010 microprocessor. The three models are the CDX-5000A, a lower priced version of the company's now-discontinued CDX-5000 workstation; the CDX-50000, a computer-aided design system that employs the company's Graphics Accelerated Engine; and the CDX-59000, a design and layout workstation with computer-aided engineering and design capabilities.

The CDX-5000A features 1.5M bytes of main memory, expandable to 2.5M bytes; the company's virtual memory operating system; a 40M-byte unformatted Winchester disk drive; and a 1M-byte unformatted 5¼-in. floppy disk. The 5000A also features a 19-in. bit-mapped display, with 1,024-by 800-pixel resolution and 64 colors. The 5000A's software includes the company's object-oriented user interface and a package for manufacturing tooling and documentation.

The single-quantity price of the 5000A is $49,900. The company also said it plans to stop marketing the older CDX-5000.

The CDX-50000 features 2M bytes of main memory, expandable to 3M bytes, and the same display and disk storage as the 5000A. The company's Graphics Accelerator Engine features a bit-slice processor with an 88-bit microcode word, said to enable a rate of up to 400,000 clips and transforms per second.

Graphics response is in the 300-msec range, the company said. The CDX-50000 also features the company's Hierarchical Schematic Editor and automatic placement and routing software. The price for the 50000 is $79,900, according to the company.

The CDX-59000 adds design analysis software to the system, featuring the company's Cadat 12-state logic simulator, a timing analyzer and a technical publications package. The 59000 has a 2M-byte main memory, expandable to 3M bytes, and the same display for disk storage as the 50000 and 5000A.

It also features the company's Graphics Accelerator Engine, as well as the Graphics Waveform Editor, said to simplify test pattern development. Postprocessing with open file architecture is provided, along with the University of California at Berkeley Version 4.2 of AT&T's Unix and a C compiler, the company said. The price for the CDX-59000 is $94,900.

All the products are available immediately. More information is available from Cadnetix, which is located at 5757 Central Ave., Boulder, Colo. 80301.

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COMPUTERWORLD
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146

Honeywell eyes pharmacy mart with TDC 3000

PHOENIX — Honeywell, Inc. has announced a small-scale version of its TDC 3000 process management system for use in the pharmaceutical industry.

Called the Process Unit Management System, the product is said to give users a tool for controlling individual process units such as batch fermentation, crystallization and precipitation operations. The system offers RS-232C ports for personal computer interfaces.

A typical configuration of the system would be a TDC 3000 multifunction controller and color graphics CRT connected to a Honeywell microcomputer. Typical software would be Heuristics, Inc.'s Onspec Control System and Lotus Development Corp.'s 1-2-3. Such a combination reportedly provides for batch reporting and data archival and spreadsheet analysis of unit performance. The price of the system is $75,000.

More information is available from Honeywell, Pharmaceutical Industry Market Manager, M/S BO5, 16404 N. Black Canyon Highway, Phoenix, Ariz. 85023

DATA STORAGE

DATAGRAPHIX, INC.
Mini-Autocom Model III

Datagraphix, Inc. has announced the Mini-Autocom Model III computer output management recorder for converting computer-generated magnetic tapes to cut, dry microfiche.

The system includes an IBM Personal Computer for loading microfilm-reformatting control information to the previous system and allowing concurrent setup and job processing.

The price for a system with a Sue (formerly manufactured by Lockheed Corp.) 8-bit minicomputer, an 800 to 1,600 bit/in. tape drive, a computer-output microfiche unit, the IBM micro and 20M-byte Winchester disk drive is about $130,000.

Datagraphix, P.O. Box 82449, San Diego, Calif. 92138.

SYSTEMS & PERIPHERALS

DYLON DATA CORP.

Magnetic tape system for HP 1000 Series A

Dylon Data Corp. has announced that its tridensity Series 10 group-coded recording magnetic tape system is now plug-compatible with the Hewlett-Packard Co. HP 1000 Series A systems.

The tape system had previously been available only for the HP 1000 Series M, E and F, a vendor spokesman said.

The price of the newly announced version of the Series 10, dubbed the Series 10-Six, is $17,950, according to the vendor.

Dylon Data, 9561 Ridgehaven Court, San Diego, Calif. 92123.

TERMINALS

DALLAS-PRISM DISTRIBUTION

Prismplus

Dallas-Prism Distribution, an operating division of Spectrum Cellur Corp., has introduced an intelligent terminal with a built-in 300 to 1,200 bit/sec modem.

Prismplus is said to include conversational or block-mode transmission options. Two RS-232C communications ports link the terminal to a CPU and printer. An RJ-11 port is available for telephone line access.

Suggested retail price for the product is $1,095. The Prismplus A, which supports the Ansi X3.64 standard, sells for $1,330.

Dallas-Prism Distribution, Suite 1000, 5080 Spectrum Drive, Dallas, Texas 75248.

PRINTERS/ PLOTTERS

CALIFORNIA COMPUTER PRODUCTS, INC.

955 Controller

California Computer Products, Inc. has introduced a sorted vector plotter controller for use with the Calcomp 5700 series of electrostatic plotter/printers. The 955 Controller uses a Motorola, Inc. 68000 microprocessor and a bit-slice microprocessor to produce output transfer rates of up to 500K byte/sec and rasterizing speeds of up to one million raster elements per second.

The 955 Controller will be housed inside the plotter as two cards. It is also available as a stand-alone unit with two I/O ports. Software for the controller is Calcomp's Host Computer Basic Software sorted vector package, which produces both raster and pen plots from the same plot data when selected via a driver.

RS-232C and Centronics Data Computer Corp. interfaces are standard with the 955 Controller, and IBM channel interface capability is optional. Up to four of the 955 Controllers can be used to tie multiple workstations to a single 5700 plotter.

The price of the 955 Controller is $9,870 in single-unit quantities.

Calcomp, 2411 W. La Palma Ave., Anaheim, Calif. 92801.

POWER SUPPLIES

TOPAZ, INC.

Voltage regulators

Topaz, Inc.'s Powermark Division has announced a line of ac voltage regulators for protecting computers, digital process controllers and other sensitive equipment, with power ratings from 1 kVA to 100 kVA in portable and stationary models.

All models feature 98% efficiency, the company said. The regulators employ electronic tap-switching technology, said to enable them to correct problem-causing voltage fluctuations in less than one cycle of line frequency.

Prices are based on the power ratings. The price of the 1-kVA voltage regulator is $1,000, and the 100-kVA regulator costs $17,000, according to a spokesman for the vendor.

Topaz, 3855 Ruffin Road, San Diego, Calif. 92123.

BOARD-LEVEL DEVICES

PRO-LOG CORP.

7842 Card

Pro-Log Corp. has introduced a standard multifunction Zilog, Inc. Z80A microprocessor-based card, said to feature two independent serial data communications channels with multidrop capability.

The 7842 card has one channel providing RS-422 interface levels and another that can be configured to either RS-232 or RS-422 interfaces, the vendor said. The product is said to meet critical requirements for long cable lengths, high noise immunity and high data rates by allowing users to dedicate one channel for long-distance or network applications and the other for a typical RS-232C terminal printer or other device.

The 7842 is said to operate with a maximum synchronous data-signaling rate of 500K bit/sec and can trans-

Continued on page 78

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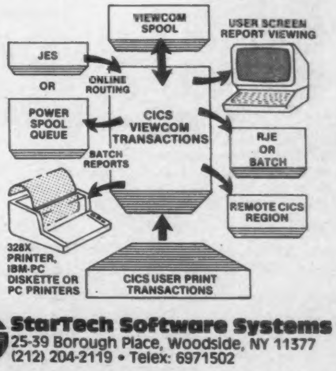
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SYSTEMS & PERIPHERALS

Continued from page 77

mit or receive data from up to 4,000 feet at 90K bit/sec. The card supports asynchronous, bisynchronous and bit-synchronous protocols, the vendor said.

Four memory sockets are said to provide up to 128K bytes of onboard memory capacity.

The price of the 7842 card is $425.

Pro-Log, 2411 Garden Road, Monterey, Calif. 93940.

PRO-LOG CORP.
Model 7712

Pro-Log Corp. has introduced a dynamic random-access memory (RAM) card said to feature memory expansion from 64K bytes to 512K bytes with parity and automatic transparent onboard refresh circuitry.

The Model 7712 is compatible with Intel Corp. 8088 5-MHz and 8085A 6.25-MHz CPU cards. It is available in four different densities: 64K or 128K bytes populated with 64K bytes by 1-byte dynamic RAM and 256K or 512K bytes with 256K bytes by 1-byte dynamic RAM, the vendor said.

The 7712's refresh circuitry is said to provide transparent refresh of dynamic RAM during push-button resets, extended wait periods, direct-memory access transfers and normal memory protection unit operations, without software overhead or hardware degradation. Three refresh models are featured: asynchronous, synchronous and forced refresh.

The 7712 operates on a single 5V power source and has a power-on/power-fail reset circuitry.

Prices range from $490 to $1,750, depending on the version, the vendor said.

Pro-Log, 2411 Garden Road, Monterey, Calif. 93940.

ISI INTERNATIONAL CORP.
ISB-3540

ISI International Corp. has announced an STD Bus-compatible universal industrial I/O module interface card, called the ISB-3540.

The product is intended to allow the user to connect industry-standard I/O module mounting racks to the STD Bus. The ISB-3540 provides 24 bidirectional I/O lines configured as three 8-bit I/O ports.

The price of the ISB-3540 is $215, the company said.

ISI International, 1275 Hammerwood Ave., Sunnyvale, Calif. 94089.

BICC-VERO ELECTRONICS, INC.
Microrack for Multibus II

Bicc-Vero Electronics, Inc. has announced backplanes for Intel Corp.'s Multibus II for the 10- and 20-slot primary system bus, and the six-slot expansion backplane.

The Microrack combines the Multibus II system with the established Multibus I by incorporating a six-slot Multibus I backplane with a 10-slot Multibus primary system bus backplane and a six-slot expansion backplane.

The price for a 20-slot primary system bus is $850, and the price for a 20-slot expansion backplane is $400, the company said.

Bicc-Vero Electronics, 171 Bridge Road, Hauppauge, N.Y. 11788.

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IBM

from page 75

scientific system. But in the mid-1970s, IBM appeared to make a corporate decision to focus more heavily on commercial processing. IBM was one of the first companies to bail out of the burgeoning supercomputer business when it abandoned plans to develop a successor to its 360/95. IBM made that move apparently because it felt the high R&D costs associated with supercomputers were hard to justify when compared with the potential market for such a system.

But with electrical engineers and computer scientists being churned out of universities at a near assembly-line pace, the demand for scientifically oriented processors has been increasing dramatically. Add to that the declining costs of hardware, and the result is a clear trend toward using computer systems in place of real-life scientific experiments.

The number of scientific-oriented systems on the market puts pressure on IBM.

Many companies have discovered computer-based modeling and simulations offer an economical way to design and test products. Oil exploration firms have discovered that using a large-scale scientific processor to churn through satellite data is much less expensive than drilling a test well.

Obviously, not every company needs a supercomputer. But supercomputers that once were the bastion of government-funded organizations are now turning up in more companies. Apparently, more organizations have been able to justify the price tag of a supercomputer as a business tool.

Supercomputing is only part of the trend toward scientific processing. Makers of engineering-oriented superminis have been having a field day selling systems to cycle-hungry users. Engineering-oriented workstations have also been selling like proverbial hotcakes.

What is IBM doing during this boom? While IBM still appears strongly committed to the commercial sector, there have been some changes in the IBM product line which suggest the company is bending to accommodate the scientific/engineering influence. The 4361 and 4381, for example, offer the strongest scientific performance of any mid-range system the company has ever offered. In fact, the 4361 and 4381 appear to compete favorably with Digital Equipment Corp.'s VAX line of superminicomputers, which have long been used for computer-intensive applications.

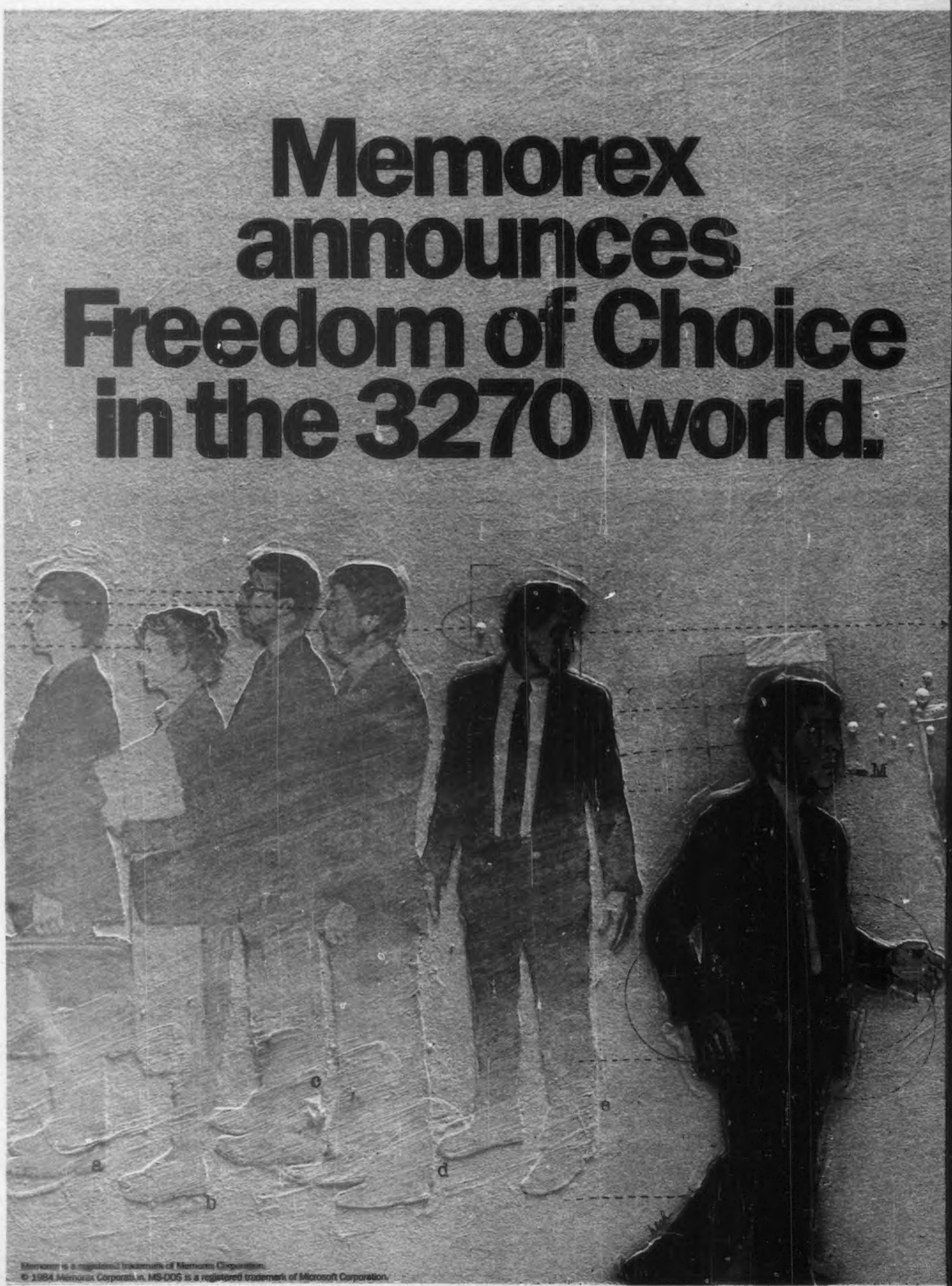
IBM's 9000 microcomputer is another example. Based on the Motorola, Inc. 68000 microprocessor, the unit was designed specifically for laboratory use. IBM has not been clear on how the 9000 fits into its overall product strategy; but the system was the first IBM product to support a version of AT&T's Unix.

About six months ago, IBM announced the 9000 could run Microsoft Corp.'s Xenix operating system. IBM's recently announced Personal Computer AT is another product which some analysts feel could be parlayed into an engineering workstation. That system supports Xenix and IBM's version of Unix, PC/IX.

Then there is IBM's relationship with Computervision Corp. Last year, IBM, the No. 2 supplier of computer-aided design and manufacturing (CAD/CAM) systems, signed an agreement with No. 1 CAD/CAM supplier Computervision [CW, Aug. 15, 1983]. The deal called for IBM to supply Computervision with the hardware to be integrated into Computervision CAD/CAM systems.

Finally, IBM's rumored Sierra line of mainframes is said to sport an internal performance in the 50 millions of instructions per second plus range. That kind of performance will undoubtedly make some engineers and scientists salivate.

Is IBM going to counter the NAS and Amdahl supercomputer announcements? Don't bet on it. Supercomputing appears to be a subject that IBM still plans to avoid like the plague. But IBM does appear to be making some subtle moves to make its product line even more attractive.



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C-1

from page 75

VAX-11/780.

The C-1 system was designed to use Convex's version of AT&T's Unix operating system with University of California at Berkley Version 4.2 enhancements.

In addition, the system is said to use an Ansi Fortran 77 compiler compatible with the one used on DEC's VAX line. All processing algorithms common to the Cray-1, including data restructuring and Fortran coding style, reportedly are compatible with the C-1. In addition, the C-1 offers a C language compiler, the vendor said.

The system has an I/O bandwidth of 80M byte/sec and is said to be able to accommodate up to 128M bytes of main memory. The C-1 has a virtual memory capacity of 4G bytes and a 64K-byte cache memory. It operates on a 3,200W input power, the vendor said.

Employing air cooling, the C-1 can be operated in or out of a raised-floor computer room. It can function as a stand-alone processor or in a network with other processors.

Networking is accomplished via the TCP/IP communications protocol and the Ethernet local-area network.

Based on proprietary CPU

The system is based on a proprietary CPU developed by Convex and a combination of off-the-shelf, large-scale integrated circuits and semicustom Cmos very large-scale integrated gate arrays. The C-1 uses multiple asychronous processing units interconnected through 64-bit buses.

These processing units include a dedicated address and scalar unit that reportedly can perform multiple scalar operations every 100 nsec. Also included is a vector processing unit that can process a 64-bit operand every 100 nsec or a 32-bit operand every 50 nsec, the vendor said. An operand can be either an integer or floating-point operation, according to the vendor.

Up to five 32-bit I/O processors, each with 32K bytes of I/O cache memory, can be attached to the system. This, the vendor said, allows I/O functions to be carried out independently of the CPU. Up to four Intel Corp. Multibus-compatible card cages, each of which can contain up to eight device controllers, are supported by each I/O processor, the vendor said.

A basic configuration

The C-1 is mounted in a 19-in. cabinet. A basic configuration consisting of the C-1 CPU with 4M bytes of 64-bit main memory, one I/O processor, a service processor unit, a hard-copy console subsystem, a 414M-byte formatted Winchester disk drive, a 6,250 bit/in. tape drive and one Multibus I/O chassis, operating system, Fortran 77 compiler and C compiler costs $495,000.

First deliveries are scheduled to begin in March.

Convex is located at Suite 151, 1819 Firman Drive, Richardson, Texas 75081.

DEBUTS

from page 75

matrix bidirectional printer that operates at 200 char./sec with data processing quality and 50 char./sec with near letter quality. The 4214 can be directly attached to System/36 and System/38 and remotely attached via the 5294 Remote Control Unit.

The 4214 Model 2 accepts continuous forms, documents on demand or manual sheet feed paper, and it can produce oversized characters, logos, forms and business graphics. The Model 2 is interchangeable with IBM 5256 Models 1, 2 and 3 and the IBM 5224 Models 1 and 2, IBM said.

The price of the Model 2, scheduled for shipping in November 1984, is $4,200, according to IBM. Prices for the 5256 printer Models 1-3 were cut approximately 30% as well. For example, the Model 3 was cut from $4,535 to $3,400.

The 3205 Color Display Console for the 4361 and 4381 CPUs features a 14-in. screen that displays 1,920 characters. The 3205 is the functional equivalent of-the 3279 Color Display Console Model 2C, IBM said, although it takes approximately one-third the desk space as the 3279 and is 22 lb lighter. The price of the 3205 is $2,895, and shipments are scheduled to begin in November 1984, according to IBM.

More information is available from IBM, National Accounts Division, 1133 Westchester Ave., White Plains, N.Y. 10604.

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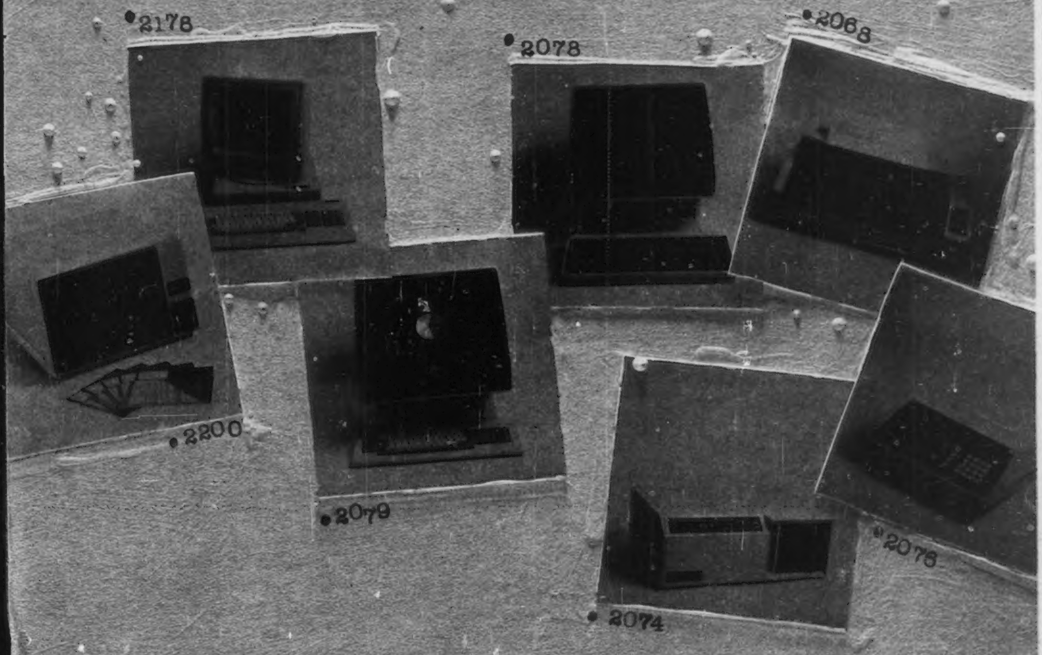

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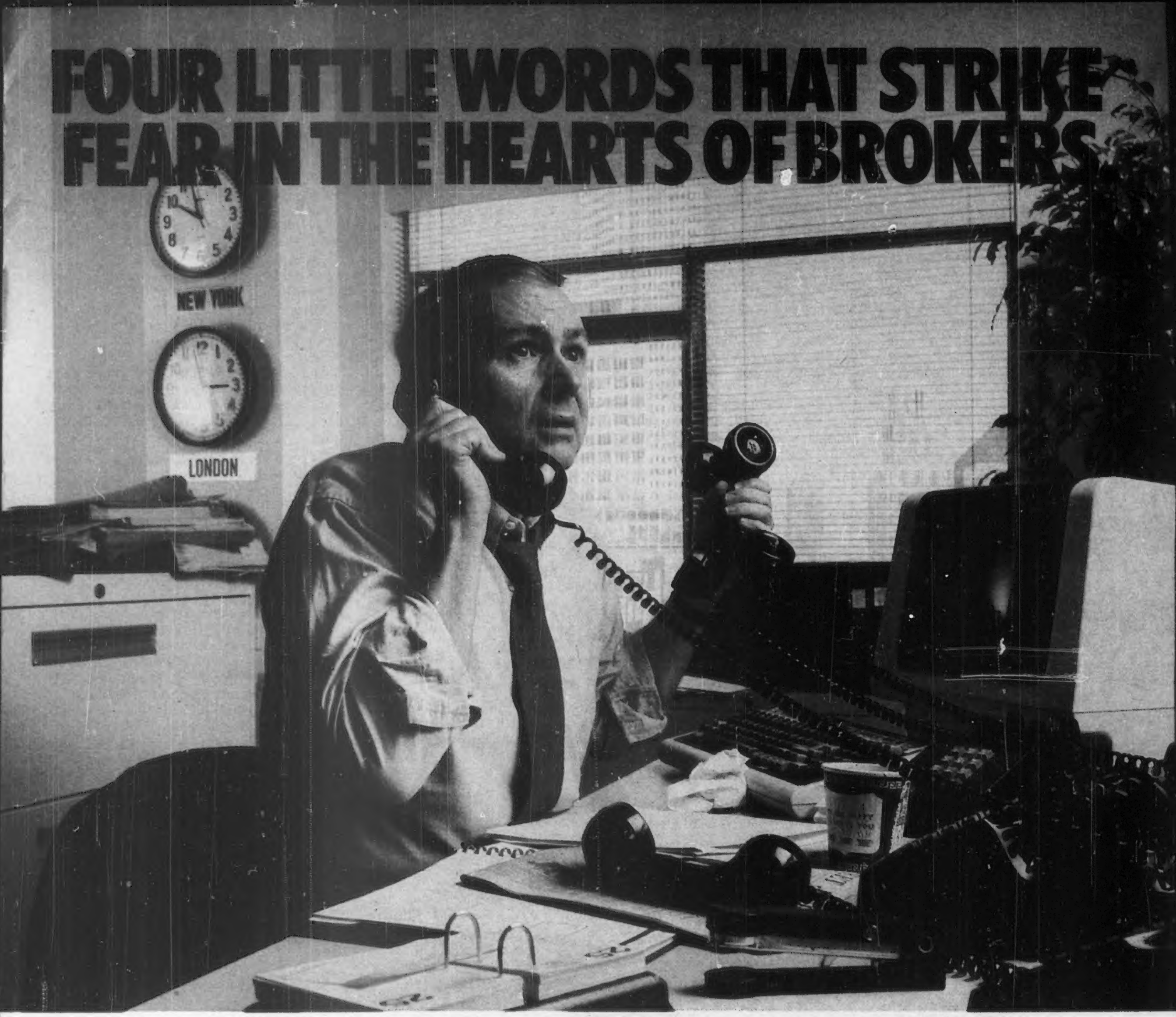

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**Computerworld, August 20, 1984*

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MICROCOMPUTERS

Corvus unveils local-area net for Apple Mac

SAN JOSE, Calif. — Corvus Systems, Inc. has announced a version of its Omninet local-area network for the Apple Computer, Inc. Macintosh, with a hardware/software network package priced less than $200.

The new Omninet network reportedly operates at 0.7M bit/sec and can connect up to 63 Macintoshes at distances of up to 4,000 ft. The network interface card is built into the computer interface cable, which plugs into the Macintosh's modem port, Corvus said.

Available in January, the Macintosh Omninet "makes the [Macintosh] a product for large companies," a Corvus spokesman claimed. "It's close to what they see as a network solution."

See **NET** page 91

Start-up company premieres decision-modeling package

Lightyear combines qualitative, numeric factors

By Kathleen Sullivan
CW West Coast Bureau

SANTA CLARA, Calif. — Lightyear, Inc., a start-up personal computer software company based here, last week introduced its first product — a decision-modeling software program known as Lightyear — designed for IBM Personal Computers and IBM-compatible machines.

In an interview at the firm's headquarters, Lightyear Chairman Terence Garnett said the program represented a new direction in personal computer software. Managers already have spreadsheet and data base management software at their disposal, he explained, but they lack a program that allows them to combine qualitative as well as numerical factors in a decision model.

According to Garnett, Lightyear helps users think through the process of making a decision, because it provides a framework for organizing, analyzing and evaluating different alternatives. In addition, the program allows users to describe their decision-making process to others by referring to the information they used to build the decision model and by showing the charts and graphs produced with the program, Garnett said.

Esther Dyson, president of Edventure Holdings, Inc., a New York-based market research firm, agreed that Lightyear exemplifies a new area of software. Dyson described the program as "nifty stuff" and predicted that users would find the program tremendously useful in decision making. "It makes people think about how they make a decision," she said.

Instead of "just plugging in data and getting a report," Lightyear allows users

See **MODEL** page 90

Package face-offs often give misleading impressions

SMALL TALK
Edward Warner
CW Staff

Encountering Lotus Development Corp.'s Symphony software package in a day-long training session, as I did recently, was a little like going on a blind date with someone reputed to be as ugly as sin — and finding that this person was actually semibeautiful.

Not gorgeous, mind you, but not bad-looking either, especially considering the published software reviews I had read prior to attending the training session sponsored by the Cambridge, Mass. software firm. The reviews pitted Symphony against Ashton-Tate's Framework and gave the nod to Framework, calling Symphony complicated and confusing.

I expected a tar pit of problems; I came away from the training session with a feeling of at least a brown-belt-level of Symphony competence.

This made me wonder how much those much-heralded product face-offs mean. I've concluded that they mean about as much as the face-offs that appear on the pages of *Car and Driver* magazine.

In that context, Framework is a Ferrari and Symphony a Porsche; two near-equals pitted against each other in a series of tests that have meaning primarily for those who write reviews.

All that the target customers are really looking for is the software equivalent of a Corvette. They've waited a while for the six-application integrated package. They know it's an impressive and powerful product — whatever brand name it carries. And they'll choose one that

See **TEST** page 89

Supplier sees windowing systems dominating software integration

By Edward Warner
CW Staff

NEW YORK — Individual personal computer programs running in a window environment will eventually outsell integrated packages, as novice users who prefer windows come to dominate over "power users," said Software Publishing Corp. President Fred Gibbons in a speech here recently.

Speaking at Tandy Corp.'s New York Personal Computer Showcase, Gibbons said his firm now has no pricing strategy for corporate users who wish to run programs on a local-area network and that "today you can put [PFS series] products on the central node [of a local-area network] and the other users can use it for free."

He added, however, that a multiport license fee eventually will be set for Software Publishing's products. The fee will be based on the number of network nodes.

Software Publishing will not follow the lead of such software firms as Lotus Development Corp. in suing corporations that make multiple copies of its software, Gibbons said. His company, he explained, will "presume the customer is honest" and continue to copy-protect its software. He said he is not worried about people stealing the product.

Gibbons added that some software firms are "victims of [their] own greed," setting too wide a margin for their products and inviting illegal duplication by cost-conscious users.

Software Publishing, a four-year-old firm in Mountain View, Calif., achieved $23 million in sales last year, Gibbons said.

Interviewed after his speech, Gibbons denied a published report that his firm will not be making future releases of its PFS series compatible with IBM's Topview window operating environment.

"Topview is a product we think adds value," Gibbons said. "Our products are going to run under Topview. . . . We have a partnership with IBM."

Optional Wang Professional mode runs 85% of IBM micro software

By John Desmond
CW Staff

BOSTON — The Wang Laboratories, Inc. Professional Computer in IBM Personal Computer monochrome emulation mode will run 85% of the off-the-shelf software available for the IBM micro, according to Mark Fritz, Wang's senior products specialist.

Speaking to a meeting of the International Society of Wang Users here late last month, Fritz noted that Wang announced the IBM emulation mode in June, and the first product was shipped Oct. 3. Some 800 of the optional $595 emulation cards are now being shipped, he said.

The product consists of an emulation card and 28 key caps needed to serve dual-function keys (IBM and Wang mode). The Professional Computer can work in either Wang or IBM mode once the card is installed, Fritz said. To get into IBM emulation mode, a user loads IBM emulation software, then mounts IBM's PC-DOS operating system, Fritz said. To go back to Wang mode, a user must load Wang's Basic Input/Output System (Bios), he said.

Of the 15% of IBM-compatible programs that will not work in Wang's IBM Personal Computer emulation mode, 12% are written in IBM Basic Interpreter, Fritz said. These programs respond to Basic written in read-only memory, and Wang has rewritten some of that Basic, Fritz said.

The remaining 3% of programs will not work for a variety of reasons. Programs that change the Wang hardware interrupt vectors will not work, Fritz said. Other programs check for particular IBM hardware components; if they are not present, the program will not run, he said. In addition, software protections sometimes prevent use of a program.

Programs that make jumps or calls to certain locations in Bios, instead of using defined software interrupt points, also may have problems, Fritz said. Programs that use the graphics character font table in IBM's Person-

See **WANG** page 92

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MMAI launches on-line micro vendor catalog

CAMBRIDGE, Mass. — Corporate microcomputer managers who want to learn the names of vendors in any microcomputer product category can now turn to an on-line catalog being offered by the Microcomputer Managers Association International (MMAI).

The catalog is part of a new electronic bulletin board service for MMAI members called the Vendor Communication Network (VCN). Once they receive their passwords, which went into the mail last month, members will be able to call the VCN using their microcomputers and modems, MMAI Director Marty Butler said.

On the VCN, members will be able to choose from a menu of product categories, select a category and view the names, phone numbers and addresses of those firms that have paid the $1,495 annual MMAI listing fee.

Electronic mail slot

The fee also provides the vendor with a slot in which to receive electronic mail from those accessing the VCN. Those vendors can pay an additional fee to run product listings or descriptions of one screen or more on the VCN. Should a vendor choose not to be listed on the VCN, however, it will not be displayed.

The service is free to users, according to Butler. The Cambridge-based MMAI also operates an electronic bulletin board and mail service for members, called the Executive Communication Network.

The VCN is housed on a Zenith Data Systems Corp. Z100 micro with an attached 11M-byte hard disk storage unit.

Infotools unveils backup program for IBM micros

CUPERTINO, Calif. — Infotools, Inc. has announced Bakup, a program to back up and restore files stored in an IBM Personal Computer XT or Personal Computer AT.

The product manages the backup process, creates a data base of backup information, simplifies the retrieval of backed up data and prints a variety of reports, Infotools said. Bakup reportedly copies a hard disk in half an hour or less and copies only those files that have been altered.

The product backs up current or previous versions of a file, a specific set of files, an entire dictionary or a volume of files, Infotools said. Bakup features diskette forecasts, disaster recovery mode, color support and context-sensitive Help screens, according to the vendor.

Bakup runs on an IBM Personal Computer with IBM's PC-DOS 2.0 operating system and 256K bytes of random-access memory. The product works with cartridge disks; file-oriented, nonstreaming tape drives; and high-density floppies, including the Personal Computer AT's 1.2M-byte high-capacity drive, Infotools said.

Backup costs $149.95.

Infotools is located at 10044 S. DeAnza Blvd., Cupertino, Calif. 95014.

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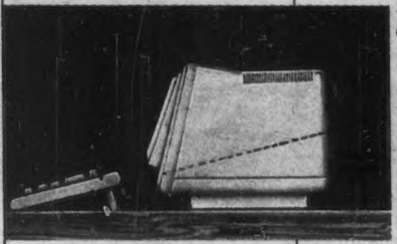

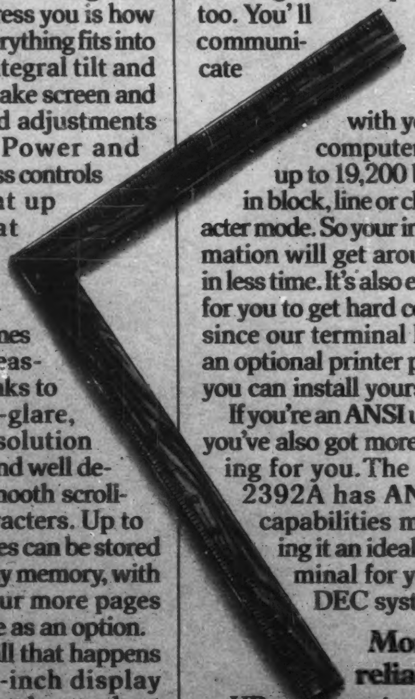

More and more. For less and less.

Hewlett-Packard introduces the HP 2392A.

When you get this new HP display terminal, suddenly you'll be running applications with less effort. In less space. For less money. And with more confidence, having HP's reliability and quality to count on.

Less effort.

The first thing that will impress you is how easily everything fits into place. Integral tilt and swivel make screen and keyboard adjustments easier. Power and brightness controls are right up front, at your fingertips.

Working becomes more pleasant, thanks to the non-glare, high-resolution screen and well defined, smooth scrolling characters. Up to four pages can be stored in display memory, with up to four more pages available as an option.

And all that happens on a 12-inch display that only takes up about one square foot of your desk.

More helpful.

With eight non-volatile, programmable function keys, it will take you less time to enter complex or repetitive commands. A handy terminal status line tells you what mode you're working in. And 17 national language keyboards are available to make work easier for everybody, just about everywhere.

You get more speed, too. You'll communicate with your computer at up to 19,200 bps in block, line or character mode. So your information will get around in less time. It's also easy for you to get hard copy, since our terminal has an optional printer port you can install yourself.

If you're an ANSI user, you've also got more going for you. The HP 2392A has ANSI capabilities making it an ideal terminal for your DEC system.

More reliable.

HP engineered the HP 2392A using state-of-the-art VLSI technology to minimize component count and increase reliability.

But, if you do need support services, just pick up the phone. A worldwide network of HP sales and service offices is staffed by qualified engineers ready to help you.

Less money.

With all these features, you'd expect to pay more than $1,295* for our new display terminal. But that's all we're asking. So why settle for less?

To get more information, call your local HP sales office listed in the white pages. Or get in touch with Terry Eastham, Hewlett-Packard, Dept. 003199, 8020 Foothills Blvd., Roseville, CA 95678. Phone (916) 786-8000. In Europe, contact

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BD02423

IBM micro gets modems, software

MIDDLEBURY, Conn. — General Datacomm Industries, Inc. has introduced three communications products for the IBM Personal Computer: General Datacomm 1200, a 1,200 bit/sec modem; General Datacomm 300, a 300 bit/sec modem; and communications software.

General Datacomm 1200 is capable of receiving data simultaneously (full and half duplex) at rates of 300 or 1,200 bit/sec, according to the vendor. General Datacomm 300 reportedly is a full-duplex modem. Both modems feature indicator lights that monitor operations; audible warnings for busy signals and wrong numbers; and self-test, analog loop-back and digital loop-back diagnostics, General Datacomm said.

The communications software is said to set automatically communications parameters, dial a telephone number, answer a telephone, log a user onto the data base service and disconnect the user. Files and spreadsheets reportedly can be sent with the product's file transfer function.

The 1,200 bit/sec modem costs $699, the 300 bit/sec model sells for $289, and communications software is priced at $199.

General Datacomm is located in Middlebury, Conn. 06762.

Desk manager tool released to replace files

DALLAS — R Systems, Inc. has introduced a desk management software system that reportedly replaces desktop address files, calculators and appointment books.

The software, R Office Manager for the IBM Personal Computer and Personal Computer XT, is said to allow workers to use a microcomputer in place of scratch pads, telephone message slips and calendars. R Office Manager's file system reportedly holds up to 8,000 addresses, depending on disk storage.

R Office Manager also includes an autodialer and a daily scheduler that shows appointments and can be manipulated for automatic scheduling in a multiuser network, according to the vendor. The software's listing function is said to offer scrolling and the ability to change, delete or print items on the list.

The software's calculator performs mathematical functions onscreen, and its calendar offers the current time and the ability to scroll from month to month, R Systems said.

R Office Manager resides in 97K bytes of random-access memory (RAM), requires a computer with 128K bytes of RAM and is priced at $89.95.

R Systems is located at 11450 Pagemill Road, Dallas, Texas 75243.

Osborne back with micros, stock offering

FREMONT, Calif. — Osborne Computer Corp. is ready to rise from the ashes of Chapter 11 with two new portable microcomputers, the Osborne 4 Vixen and the Osborne 3 Encore, and is going to make a public stock offering.

The Vixen, which is essentially an enhanced version of the Osborne 1, features a Zilog, Inc. Z80A microprocessor operating at 4 MHz, Digital Research, Inc.'s CP/M 2.2 operating system, 64K bytes of random-access memory (RAM), a 7-in. amber display, two 5¼-in. disk drives that each store 390K bytes of memory and a serial and a parallel interface. The 22-lb computer bundles eight programs, including Micropro International Corp.'s Wordstar and Sorcim Corp.'s Supercalc 2. It will sell for $1,298.

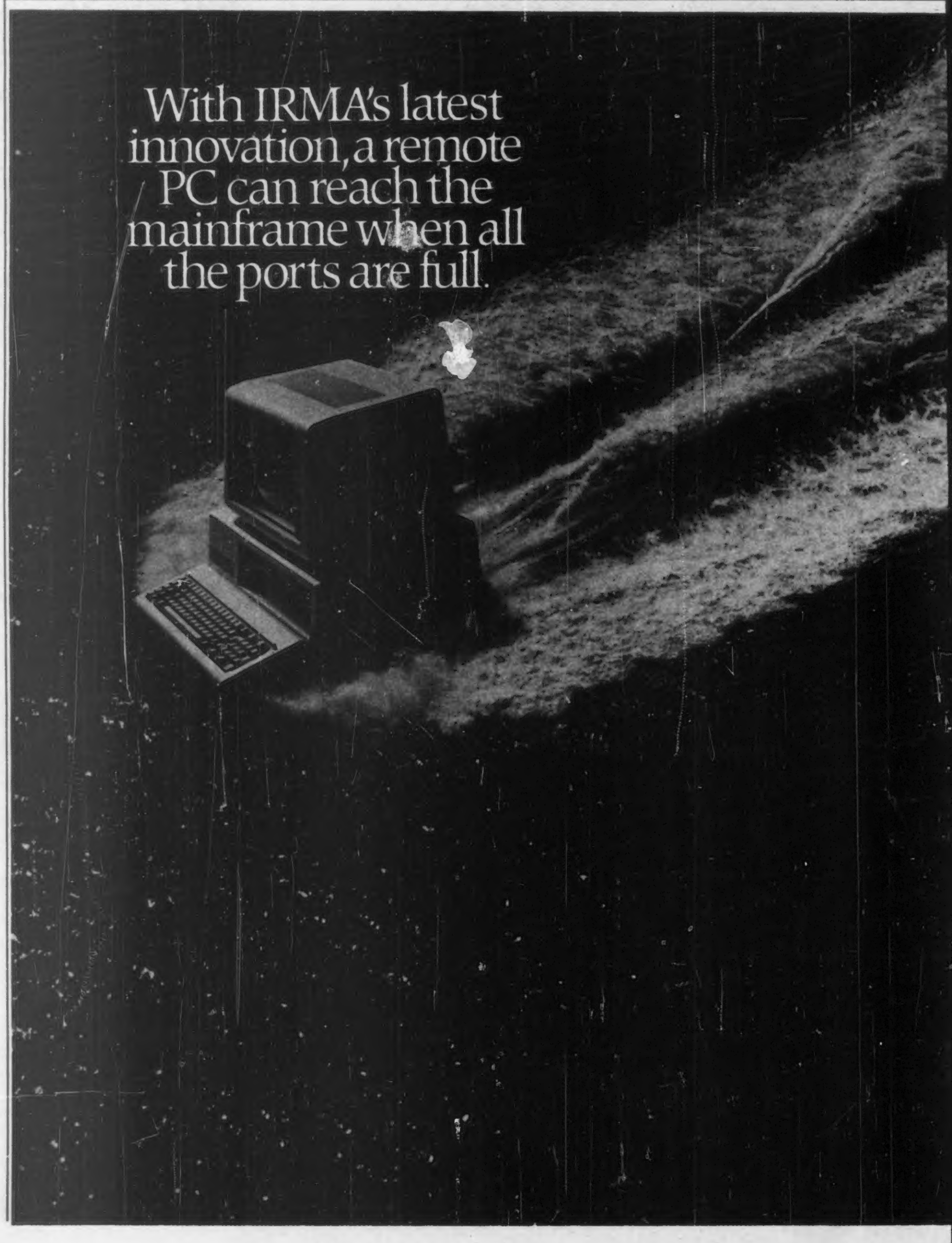
The 9½-lb Osborne 3 Encore features an Intel Corp. 8086 microprocessor, 128K bytes of RAM, a 16-line by 80-col. LCD with a 480- by 128-pixel resolution, one 360K-byte floppy disk drive, an RS-232C port, a Centronics parallel port and Microsoft Corp.'s MS-DOS operating system. The Encore costs $2,995.

Osborne plans to sell its computers through its base of 150,000 users and has set modest projections of 20,000 units being sold in 1985. The company will continue to sell the Osborne Executives that were left in stock when bankruptcy proceedings under Chapter 11 of the Federal Bankruptcy Act began. The company has also abolished its elaborate manufacturing plant.

Only 35 employees remained with the company through its roller coaster existence, and a quartet of employees were responsible for the company's reorganization, according to Osborne President Ronald Brown.

Brown reported that approximately two-thirds of the $15 million debt that forced the company into bankruptcy proceedings has been paid. Osborne plans to raise an additional $3 million to $4 million at a public stock offering, limited to residents of California, that will be scheduled later this year.

Osborne Computer Corp. is located at 42680 Christy St., Fremont, Calif. 94538.


With IRMA's latest innovation, a remote PC can reach the mainframe when all the ports are full.

Cipher Data announces IBM micro peripherals

MONTEREY, Calif. — Cipher Data Products, Inc. has introduced a ¼-in. tape backup system, the 5210, and a second version of its Model 526 Floppytape drive, both for the IBM Personal Computer XT.

The 5210 ¼-in. tape backup system, said to be the company's first product for the end-user market, has a 25M-byte storage capacity. It plugs into the back of an IBM Personal Computer XT without requiring a special interface card. The 5210 is based on the firm's 520 line of Floppytape drives, according to Cipher Data Products.

The 526 reportedly provides 25M bytes of storage and will be marketed only to OEMs and systems integrators.

The system includes both the drive and the software needed to use it with the Personal Computer XT, according to Cipher.

The 5210 will be available in January for $1,095. The 526 is priced at $390.

More information on the announcements is available from Cipher Data Products, which is located at 10101 Old Grove Road, San Diego, Calif. 92138.

Hayes-compatible portable out from STM Electronics

MENLO PARK, Calif. — STM Electronics Corp. has introduced a version of its STM PC portable personal computer that includes a 1,200 bit/sec modem compatible with Hayes Microcomputer Products, Inc. equipment.

The 17-lb STM PC previously offered an optional 1,200 bit/sec modem that was not Hayes-compatible. The latest STM PC comes bundled with Microstuf, Inc.'s Crosstalk communications software and will support Digital Equipment Corp. VT100 and IBM 3270 terminal emulation, the vendor said.

The system reportedly features 256K bytes of internal storage, expandable to 512K bytes; a lighted LCD; built-in thermal printer; and two 5¼-in. diskette drives.

The STM PC is said to use the 16-bit Intel Corp. 80186 microprocessor, operating at 8 MHz, and Microsoft Corp.'s MS-DOS operating system.

The 256K-byte STM PC with a 1,200 bit/sec modem is priced at $3,725.

More information is available from STM Electronics, which is located at Suite 250, 535 Middlefield Road, Menlo Park, Calif. 94025.

It's a sinking feeling indeed.

On the one hand, you have a remote PC which makes a lot of business sense to connect to your big IBM mainframe.

On the other, your 3270 controller doesn't have a single empty port. Which means buying a new controller for one PC. Which doesn't make any kind of business sense at all.

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SOFTWARE

SSR CORP.
Omnifile

SSR Corp. has enhanced Omnifile so that the data base manager offers a facility to support data exchanges with applications using Data Interchange Format or delimited-Ascii file formats.

Some products that use these formats include Lotus Development Corp.'s 1-2-3 and Ashton-Tate's Dbase II. The product reportedly can interact with a word processing program to allow users to produce merge files for form letters from prospect or data lists. Omnifile also is said to be menu-driven and to offer single-keystroke instructions.

Omnifile runs on the IBM Personal Computer, Victor Technologies, Inc. 9000 and Wang Laboratories, Inc. Professional personal computers.

Omnifile is priced at $425.

SSR, 1600 Lyell Ave., Rochester, N.Y. 14606.

SOFTWARE PRODUCTS INTERNATIONAL
Open Access

Software Products International has announced that its Open Access integrated software package is available for the Data General Corp. Data General/One portable personal computer.

The product features a relational data base that can process five files simultaneously, a word processor that can link files and include data and graphs from other modules and a graphics module with three-dimensional capability, the vendor said.

Also included are an appointment manager that can track 32,767 appointments over 20 years and a communications module that can be set to operate unattended, the vendor said.

Open Access is priced at $695.

Software Products International, 10240 Sorrento Valley Road, San Diego, Calif. 92121.

PARLAY SOFTWARE CORP.
Quota:100

Parlay Software Corp. has introduced Quota:100, a software package for the IBM Personal Computer AT and Personal Computer XT and Compaq Computer Corp. Plus and Deskpro personal computers.

Quota:100 is reportedly composed

Continued on page 88

MICROCOMPUTERS

Continued from page 87

of modules for order processing, invoice confirmation, commissions receivable and sales analysis. It offers integration and multiuser capabilities found in minicomputers, the vendor said.

The product is said to feature menu-driven commands and alphabetic displays and searches.

It is priced at $2,995.

Parlay Software, 4651 Westgrove Drive, Dallas, Texas 75248.

CORPORATE MICROSYSTEMS, INC.
Mlink

Corporate Microsystems, Inc. has introduced its Mlink software for micro-to-micro and micro-to-mainframe communications.

Mlink reportedly offers three proven file transfer protocols: built-in, on-line Help functions; directory-based autodialing for most modems; and automatic log-on. It is said to be compatible with direct-dial facilities, concentrators, multiplexers and public networks.

The product can reportedly perform as a terminal emulator, an error-free data transfer utility, a remote bulletin board, an electronic mail system and control software for distributed processing.

Mlink is said to be compatible with IBM's PC-DOS; Microsoft Corp.'s MS-DOS; Digital Research, Inc.'s CP/M 86, CP/M 80, MP/M II, MP/M 86 and Concurrent CP/M 86; and Microsoft's Xenix operating system.

Mlink is priced at $250.

Corporate Microsystems, Box 277, Etna, N.H. 03750.

DIGITAL PATHWAYS, INC.
Disk P.M.

Digital Pathways, Inc. has announced Disk P.M., a preventive maintenance system for IBM Personal Computer or IBM-compatible microcomputers with hard or floppy disks.

The product diagnoses problems, automatically condenses hard or floppy disks, rebuilds damaged directories, recovers damaged files, locks out faulty areas and copies system information to disks that refuse to boot, Digital Pathways said.

The system reportedly can read data files that have been damaged and move them in a readable format to another location on the disk.

The Disk P.M. preventive maintenance system works on an IBM Personal Computer with 128K bytes of random-access memory and IBM's PC-DOS 2.1 or Microsoft Corp.'s MS-DOS 2.0 operating system.

The product costs $49.95.

Digital Pathways, 1060 E. Meadow Circle, Palo Alto, Calif. 94303.

LIMICOM, INC.
Prodraw

Limicom, Inc. has announced Prodraw, an integrated graphics product that runs on the IBM Personal Computer under IBM's PC-DOS operating system and includes a color graphics board.

The package combines a color paint system, star-structure data base with an auto-cycle option, decoder capability and terminal emulation software, Limicom said.

Prodraw reportedly features pop-up menus, graphics and text editing, on-line Help and scrolling within windows. It provides 320- by 200-pixel resolution, 10 to 16 colors, eight fill textures and definable brush and text sizes, according to the vendor.

Prodraw is priced at $350, the vendor said.

Limicon, 144 Hampton Ave., Toronto, Ont. M4K 2Z1.

DATA ACCESS CORP.
Dataflex 2.0F

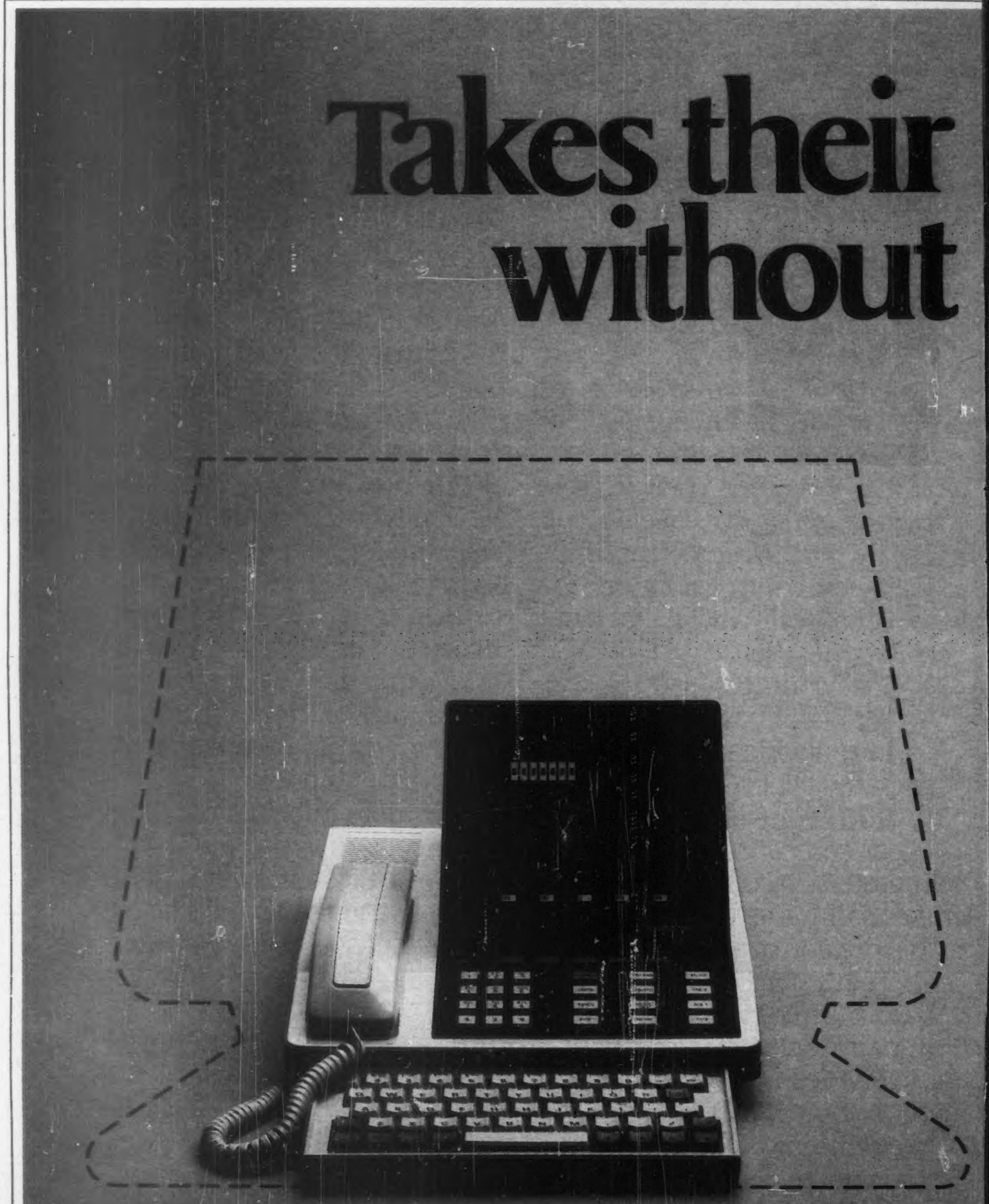
Data Access Corp. has announced the enhancement of its Dataflex applications development data base software for the IBM Personal Computer line and other 16-bit systems.

Dataflex 2.0F reportedly offers such new features as the ability to manage up to 250 data base files, each over 16 million records, and a point-and-shoot operator interface.

Dataflex 2.0F is said to be available for the following operating systems: IBM's PC-DOS, Microsoft Corp.'s MS-DOS 2.0 and 3.0, Digital Research, Inc.'s CP/M 86, Concurrent CP/M 86 and Turbodos 1.4.

It is priced at $995 in a single-user version and at $1,250 in a multiuser version.

Data Access, 8525 S.W. 129 Terrace, Miami, Fla. 33156.



MICROCOMPUTERS

SSR CORP.

Infotory

SSR Corp. has announced enhancement of its Infotory inventory management system for the IBM Personal Computer and Apple Computer, Inc. Apple II.

Infotory reportedly now offers a sort speed 40 times faster than the original version and includes Retail Method Accounting, a function that reportedly allows retailers to know how much their inventory is worth at retail price levels. It is priced at $295 for the Apple II and $575 for the Personal Computer.

SSR, 1600 Lyell Ave., Rochester, N.Y. 14606.

TRAVELING SOFTWARE, INC.

Traveling Appointment Manager

Traveling Software, Inc. has introduced its Traveling Appointment Manager for portable computers running Microsoft Corp.'s MS-DOS operating system, including the Sharp Electronics Corp. PC-5000, the Hewlett-Packard Co. HP 110 and the Data General Corp. Data General/One.

The Traveling Appointment Manager provides on-screen or printed appointment lists and things-to-do agendas, according to the vendor. The package is said to put times, dates, names and comments in order.

It reportedly also automatically reschedules regular appointments on a daily, weekly, monthly or annual basis.

The Traveling Appointment Manager is priced at $99.95.

Traveling Software, 11050 Fifth Ave. N.E., Seattle, Wash. 98125.

CPAIDS

1985 CPAids Master Tax Program

CPAids has announced the 1985 version of its Master Tax Program for microcomputers running under the Digital Research, Inc. CP/M 80, IBM PC-DOS and Microsoft Corp. MS-DOS operating systems.

Users can now move forms backward and forward on the screen; an expatriate section also has been included as a standard feature, CPAids said.

A laser print option is capable of interfacing microcomputers and laser printers without the need for hard disk storage, according to the vendor. All other print options — preprinted continuous forms, blank paper with overlays and computer generated forms — reportedly are included with the program as a standard feature in this version.

The laser print option is priced at $500, and the entire package costs $1,795, with annual updates selling for one-third the current price.

CPAids, 1061 Fraternity Circle, Kent, Ohio 44240.

See TOOLS page 91

TEST from page 83

works for their needs, be they transferring delinquent account information from a data base into a series of form letters or retrieving stock prices over phone lines to generate on-the-spot graphs.

Do the two extra keystrokes required to execute a function in Symphony rather than Framework mean a lot to these users? Do Symphony's 600 menu options (what one publication called a "staggering number") bother them much, either?

I think not. These users are no dummies; they're "power users" of sophisticated micro software. To them, the extra keystrokes may mean only as much as a split-second's difference in acceleration means to the driver who chose the Porsche over the Ferrari. What really matters to the power user is whether he can get up to speed with the product reasonably quickly, whether he already has some familiarity with similar products and (in large firms) whether his corporate information center will support it.

Now, what application software product is the most-used on corporate micros and is likely to be the most widely supported by corporate information centers? The answer, of course, is 1-2-3.

Like other microcomputer users with an interest in new products and a taste for competition, I'll read about the next software battle royal that reviewers put together. Get the package that fills your needs, one you've tried yourself. Leave concern over split-second acceleration to the pages of *Car and Driver*.

terminal's place the space.

It's important that the Displayphone-Plus* terminal can fit with an existing information management system, offering download emulation of virtually any cursor addressing conversational CRT and plug-and-play compatibility with the VT-100.

But what makes the Displayphone-Plus amazing is that it does it all while still fitting comfortably on a desk.

Inside the Displayphone-Plus terminal is a 212A compatible auto answer modem with selectable 300/1200 BPS transmission rates and full automatic log-on. So it can meet the needs of managers and other occasional data users, while emulating such terminals as the Digital Equipment Corporation VT-100™ and VT-52,™ ADDS Viewpoint,* Regent 25,* and many more.

On the outside is a full-stroke keyboard and easy-to-read amber screen which allows the Displayphone-Plus terminal to match the performance of large, conventional terminals. Its sophisticated telephone capabilities allow it to surpass them with a 90-number directory, automatic dialing, and handsfree speaking. And it's as easy as a telephone to use.

To find out more about the Displayphone-Plus terminal, call 1-800-328-8800, or write to Northern Telecom Inc., Advanced Communications Terminals Division, P.O. Box 202048, Dallas, TX 75220-9990.

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MODEL

from page 83

to enter "what-if" scenarios, which lets them see how different criteria or considerations would affect the outcome of a decision, Dyson explained.

In general, beta test users contacted by *Computerworld* gave Lightyear high marks, agreeing that it was well-designed and easy to use.

Tony Morris, president of Morris Decision Systems, Inc., an independent computer dealer and professional services firm in New York, said Lightyear breaks new ground because it permits users to structure decision making in a natural manner.

Dick Lowell, a systems consultant in Bank of America's end-user computing offices in San Francisco, described Lightyear as "user-friendly, forgiving and powerful." Lowell said he thought the program would be useful in a wide variety of decision-making situations.

> *In general, beta test users contacted by* Computerworld *gave the program high marks, agreeing that it was well designed and easy to use.*

Marlin Crum, senior systems engineer at American Express Travel Related Services Co., agreed that the program was well designed, but described its $495 price tag as "rather stiff."

In a recent demonstration to illustrate how a company might use Lightyear to make an acquisition decision, Garnett showed the four steps necessary to set up a decision model and the ensuing methods of evaluating the choices.

To set up a decision model, a user would enter the list of companies considered for acquisition, define the criteria, give each a numerical weight of importance, evaluate the firms using the criteria and add rules to help narrow the choices.

The criteria can be expressed in words, numbers or graphs. In the acquisition model, for instance, a manager could use words to rate each company's position in the market (weak to strong), use numbers to show return on sales and use graphs to reflect a perception of the skills of each company's top management.

The program reportedly lets users add rules that can act as policies or guidelines in the decision making. These "must-be/should-be" rules may be "simple" (the profit margin must be greater than 15%) or "complex" (if risk is greater than normal, the return on investment should be greater than 20%), according to the company. They can be added to the decision model as needed, the firm said.

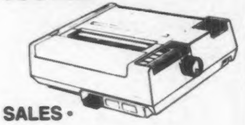
Once the information has been entered into the decision model, users can assess the data using Lightyear's evaluation screens, which display the information in horizontal bar graphs and numerical scores.

Considers alternatives

The program is said to let users view the alternatives in a rank order, see how any single alternative scored on each criterion and rule, compare the overall scores of two alternatives and compare the scores of two sets of alternatives in two different models.

Lightyear is available now for the family of IBM Personal Computers, Compaq Computer Corp. computers or any 100%-compatible machine, the company said. It requires a minimum of 192K bytes of random-access memory, at least one double-sided disk drive and a monochrome or color monitor.

Lightyear is located at Building 2, 1333 Lawrence Expwy., Santa Clara, Calif. 95051.



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MICRO DATA BASE SYSTEMS, INC.

Knowledgeman for Personal Computer AT

Micro Data Base Systems, Inc. has announced that its Knowledgeman knowledge management system is now available on the IBM Personal Computer AT.

The Personal Computer AT version reportedly integrates an electronic spreadsheet, statistics, ad hoc inquiry, forms management, a structured programming language and a relational data base management system, according to the vendor.

A tutorial manual is also included, according to Micro Data Base Systems.

Knowledgeman knowledge management system for the IBM Personal Computer AT is available at the price of $500.

Micro Data Base Systems, P.O. Box 248, Lafayette, Ind. 47902.

MARK WILLIAMS CO.

C Programming System

Mark Williams Co. announced a C compiler and source debugger for personal computers in Microsoft Corp. MS-DOS 2.0 and Intel Corp. 8086 environments.

The C Programming System includes the MWC86, said to support the full C language. It features large and small models of compilation, Intel's 8087 math coprocessor support and PC-DOS 2.0 path names. The compiler reportedly features common code elimination, peephole optimization and register variables.

The system also includes CSD, the source debugger, which allows a programmer to set trace points on variables and expressions with full history capability. It features on-line Help instructions and allows programmers to debug graphics programs without disturbing the program under test.

The software requires 256K bytes of memory and one double-sided IBM-compatible 360K-byte floppy disk drive.

The C Programming System is being marketed by Control-C Software, Inc. and is available for $500.

Control-C Software, 6441 S.W. Canyon Court, Portland, Ore. 97221.

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NET from page 83

close to what they see as a network solution."

Industry analysts suggested that the network is one among an ongoing series of product introductions from Apple and third parties that will make the Macintosh a much more competitive business machine. Stephen Caswell, analyst with the Trigon Systems Group in Toronto, predicted that a move toward networked Macintoshes will accelerate when Apple delivers its promised laser printer next year.

Corvus' Omnidrive storage systems — which include a built-in disk server — and a shared printing facility are available for the Macintosh network. A 5.5M-byte (formatted) Omnidrive costs $1,795; an 11.1M-byte system is $2,495; a 16.5M-byte model is $3,195; and a 45.5M-byte Omnidrive is $4,995.

Unlike other Omninet installations that run at 1M bit/sec and can accommodate personal computers from multiple vendors, the new system accepts only Macintoshes.

Corvus expects competition for the network from Apple's Applebus, but the Omninet offers "much greater distances and much faster speed," the spokesman said.

Corvus is located at 2100 Corvus Drive, San Jose, Calif. 95124.

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WANG

from page 83

al Computer Bios will not work, and programs that need special hardware or communications programs that use an RS-232 ring indicator signal may not run, he said.

Top-selling programs such as Lotus Development Corp.'s 1-2-3 generally work "because they have good programming in them," Fritz said.

Wang is offering the Personal Computer emulation "to allow customers to run more off-the-shelf packages because it takes a lot of time to convert" software, Fritz explained. He noted the company has an internal list of software that will run in IBM emulation mode, but Wang is trying to get specific software vendors to endorse the emulation.

"If we say Lotus works and a function doesn't work, whose responsibility is it, ours or Lotus'?" he asked.

IBM color graphics emulation

Wang also plans to announce IBM Personal Computer color graphics emulation in the first quarter of 1985, Fritz said. The vendor hopes to achieve a rate of better than 85% for running off-the-shelf hardware with the color emulation, he added.

He said Wang has plans to allow other operating systems, such as Digital Research Inc.'s CP/M, to run on the Wang Professional Computer.

In another compatibility area, Fritz said a printer that works on the IBM Personal Computer may or may not work on the Wang Professional Computer. Wang uses a generalized printer driver and a serial driver that supports the X-on, X-off protocol, he said.

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RG SOFTWARE SYSTEMS, INC.
PC Tracker

RG Software Systems, Inc. has introduced its PC Tracker inventory management system for the IBM Personal Computer.

PC Tracker reportedly can be used for specific tracking of multiple Personal Computers, software and peripherals from purchase through receipt, installation and use. Its data base may be filled with vendor and product names, locations, open purchase orders, inventory and a tickler message file, the vendor said.

PC Tracker is said to allow users to work entirely with names rather than numbers and to provide a positive verification requirement at each stage of data entry.

PC Tracker requires a computer with at least 256K bytes of internal memory and two disk drives. It is priced at $495.

RG Software Systems, 501 Office Center Drive, Fort Washington, Pa. 19034.

GREENLEAF SOFTWARE, INC.
The Greenleaf Functions

Greenleaf Software, Inc. has announced enhancement of The Greenleaf Functions, a library of functions for programmers working in C language on the IBM Personal Computer or Personal Computer XT.

The enhanced Greenleaf Functions reportedly includes 13 categories of routines, including video, graphics, color text, keyboard, time and date, RS-232 asynchronous, equipment access, system interface and diagnostics.

The library also includes documentation with examples, demonstration programs, source code, a reference card and a subscription to a newsletter about the product, according to the vendor.

The Greenleaf Functions is priced at $175.

Greenleaf Software, 2101 Hickory Drive, Carrollton, Texas 75006.

SCENIC COMPUTER SYSTEMS CORP.
Scenicwriter/HP

Scenic Computer Systems Corp. has introduced its Scenicwriter/HP text composition system for the Hewlett-Packard Co. Laserjet Printer operating with the IBM Personal Computer and Stride Microcorp personal computers.

Scenicwriter/HP reportedly allows utilization of the Laserjet font cartridges, built-in fonts and symbols.

It is also said to be able to create indexes, tables of contents and lists of illustrations as documents are being prepared.

Additionally, Scenicwriter/HP can number chapter headings, sections, subsections, footnotes and illustrations in order as each document is printed, according to Scenic Computer.

Scenicwriter/HP is priced at $995.

Scenic Computer Systems, 14852 N.E. 31st Circle, Redmond, Wash. 98052.

TEXAS INSTRUMENTS, INC.
PC/Focus for the TI Professional

Texas Instruments, Inc. has introduced PC/Focus, a version of the Focus data base management system ported to run on the TI Professional personal computer.

PC/Focus, developed by Information Builders, Inc., is based on the mainframe version of Focus. The system reportedly offers a data base management system composed of three elements: a relational data base management system, the Focus fourth-generation nonprocedural language and report writing and data analysis facilities.

PC/Focus is said to provide the ability to query the data base by positioning the cursor on sections of windows that automatically appear on the screen.

PC/Focus is priced at $1,595.

Texas Instruments, Data Systems Group, P.O. Box 809063, Dallas, Texas 75380.

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*National Institute For Occupational Safety and Health Study, August 1981.

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COMPUTER INDUSTRY

Mainframes revived in used computer market

Frugality overcomes stigma of recycled machines in booming rental mart

By Charles Babcock
CW New York Bureau

NEW YORK — When China receives a gift of a system upgrade later this month, it will turn to Ultimate Computer Services, Inc. (UCS) in Denville, N.J., for installation. After all, not everyone these days knows how to handle an IBM 370.

Aging computer systems are UCS' specialty. The 370 model line is now 14 years old; 370s that sold for $250,000 to $450,000 in their heyday are available on the used computer market for the price of an IBM Personal Computer, according to UCS spokesmen.

UCS still deals in a few IBM 360s, first introduced in 1966. About the only customers for them are developing nations seeking to enter the computer age.

More typically, UCS deals in such aging IBM mainframes as the 3033, 3081 or models from the 4300 series, introduced in 1979. UCS reconditions and refurbishes the equipment for brokers and lessors who find customers for them.

And customers keep getting easier to find, according to the lessors who work with UCS.

Leasing sales growing

Used computer equipment leasing and sales grew by 40% last year, after several years of flat sales, said Robert LaRocca, UCS chief executive officer. It is growing even faster this year, he said.

Two years ago, a survey showed that dealing in used computer equipment amounted to an $8 billion industry, said Ronald L. Gibb, of Computer Merchants, a dealer in Chappaqua, N.Y., that does business with UCS.

"A lot of companies would rather spend $300 a month for a used 3350 disk drive than $1,000 a month for a new 3380," said Dennis Moyer, vice-president of National Computer Rental, Inc. in Parlin, N.J., a lessor that relies on UCS to recondition equipment.

"The stigma of used equipment is gone," Moyer added, saying even large corporations would rather rent an aging IBM 3033 mainframe for a year than buy a $1.5 million 3083 that may soon be outperformed by a new model line.

Due to this demand, the 12-year-old company is reconditioning 1,000 computers a month at its plants in Rockaway, N.J., and Bensenville, Ill.

In its 64,000 sq-ft warehouse in Rockaway, UCS has 25,000 computer cables coiled on racks. The equivalent of a roomful of keyboards sits waiting for orders, and long rows of processors, disk drive controllers and other equipment occupy the floor.

"This place is jammed," LaRocca said.

When a lessor or broker sends a unit to UCS, it may arrive with a dented cabinet, chipped paint and many years of accumulated grime. UCS crews clean the machine and repaint it. Since 95% of its business is

See **UCS** page 106

INDUSTRY INSIGHT
Peter Bartolik
CW Senior Editor

PCM industry thinning out

While the microcomputer industry seems locked in a preshakeout, the higher end IBM plug-compatible manufacturers (PCM) seem to be rushing toward their own shakeout cycle.

First, Control Data Corp. dropped its PCM disk drive business. Memorex Corp., the Burroughs Corp. subsidiary, experienced the same technical problems as CDC, but said it can turn things around; however, if IBM comes out with new disk drives as expected early next year, Memorex may have to reconsider.

Storage Technology Corp. (STC) seems headed toward the brink of disaster much more rapidly than even the gloomiest doomsayers could have predicted.

With STC technically in default on some hefty loans and mired in red ink, the company would seem ripe for a takeover.

On top of lawsuits pertaining to the earlier folding of STC's attempt to build a plug-compatible mainframe, a rash of shareholder suits has been filed claiming that the company misled investors on its present financial situation. During a time when it is attempting to cut overhead expenses by 20%, the immense cost of battling lawsuits on two fronts can only prove to be debilitating.

All this comes at a time when the company certainly should be considering the need to gear up with an answer to the forthcoming IBM disk drives. In light of recent price cuts by IBM, it seems unlikely STC can generate the revenue necessary to compete with a new model — or possibly two new models.

The company seems stuck in a vicious

See **STC** page 106

Ashton-Tate chief resigns position

CULVER CITY, Calif. — David C. Cole resigned his positions as chairman and chief executive officer of Ashton-Tate, the company announced last week.

Cole joined the company in February 1982 as president, was named chief executive officer in April 1983 and was named chairman in August 1983.

The 32-year-old executive said in a prepared statement that he has accepted a key executive post with "a major East Coast corporation." He said he will reveal the identity of the company in mid-November.

"It's a once-in-a-lifetime opportunity, which I simply couldn't pass up," Cole said.

Cole served with Ashton-Tate during a period when the company went from a small, private concern to a publicly traded corporation.

Leading micro software firms

Ashton-Tate ranks among the nation's three leading independent microcomputer software firms based on sales of its highly successful Dbase II, the follow-up Dbase III and the Framework integrated software program that is challenging Lotus Development Corp.'s Symphony in the integrated software market.

Ashton-Tate said an outside member of its board of directors, Carmelo J. Santoro, will replace Cole as chairman on an interim basis.

Cole's resignation takes effect Nov. 5, and he also submitted his resignation from the board of directors.

'Canadian bombshell' a dud in portable market

By Brian Banks and Laura Jo Gunter
Computerworld Canada

"Another Canadian hope turned to mud" was how Murray Bell recently characterized his invention, the Hyperion portable computer. The computer's recent demise has sent its manufacturer, Comterm, Inc. of Montreal, scuttling back to the shelter of its traditional office systems market, nursing a $48.3 million loss.

As Bell's comment indicated, the Hyperion's fall from grace is more than just a failure for Comterm. It also casts a shadow on the Canadian computer industry as a whole.

Since its first appearance at the Atlanta Comdex/Spring '82 show, the Hyperion was a symbol of Canadian ingenuity. Its sleek, new look took the U.S. industry by storm, prompting some to call it the "Canadian bombshell." Now, after sharing in its glory, the Canadian computer industry, like Comterm, must learn from its failure.

The Hyperion's passing is not the result of one wrong move or one set of unfortunate circumstances. Rather, it stems from a string of events that began even as the machine first rolled off the production line in January 1983. At that time, control of the computer's future had just passed from Bell and his company, Dynalogic, to what was then known as Bytec Management Corp. Bytec, headed by Michael Cowpland and Glen St. John, already owned the major share of Dynalogic. These two were dissatisfied with Bell's marketing plans and sought to change them.

So instead of hiring a skilled marketing specialist as Bell desired, Bytec sold the Hyperion largely through conventional advertising in business magazines.

Bell said a misunderstanding of the retail market led to a mishandling of the micro's distribution channels. When Bell himself opened up a computer center in Ottawa after he left Bytec, he became a Hyperion dealer and found communications between the company and dealers poor and postsales support weak.

Unhappy dealers or not, early sales for the machine were good, but production lagged well behind demand. On top of this, the first computers produced by SCI Systems, Inc. of Huntsville, Ala., the manufacturer contracted to build Hyperions for the U.S. market, had faulty disk drives. As early as July 1983, Bytec faced a $25 million backlog in firm orders for the computer.

This predicament soon put a cash squeeze on the company. At the time, Cowpland and St. John also sat

See **HYPERION** page 106

Laser printers — superior quality spurs system growth

OUTSIDE LINES
Bohdan Szuprowicz

Laser printers are the elite among nonimpact printers. They offer superior graphics and paper handling capabilities, and as prices come down thanks to the latest technological breakthroughs, many analysts predict they will revolutionize the computerized workplace in the years to come.

Until recently, laser printers were based on the use of gas lasers, which emit a very thin light beam that is reflected off a spinning mirror onto a rotating photosensitive drum, such as that used in the photocopying process. Dry or liquid toner is applied to the sensitized areas of the drum and then transferred onto the paper to produce a page of print.

The latest breakthroughs involve the introduction of tiny semiconductor laser diodes, which are as small as a grain of sand and emit beams of light that sensitize the drum. These semiconductor laser diodes are cheaper than gas lasers, require less power at lower voltages to activate and are more durable. As a result, the low-end laser printer market, which consists of devices that can print up to 20 page/min, is expected to explode, particularly as the use of personal computers with graphics capabilities continues to proliferate.

Because laser printers are revolutionary in their capabilities to print with different fonts, mixing text and graphics, and demanding for fast voluminous data input, most current computers and software need further development to take full advantage of these devices. However, it is clear that availability of better and faster printers will be creating a new, competitive arena for manufacturers of information processing systems.

Laser printers are believed to account for 80% of the total nonimpact printer market, which is growing fairly rapid at 40% per year and is expected to reach $4.5 billion in sales revenues by 1988.

Within the sometimes-dubbed "intelligent copier/printer market," the low-cost printer segment is generating most attention because it is growing at a whopping 200%. As soon as the more powerful 32-bit microcomputers become common, this market is expected to skyrocket because these systems will be much more capable of taking advantage of all the benefits of a laser printer.

Dominated by leaders

Because laser printing is akin to photocopying, it is not surprising to find that it is dominated by the leading firms in that industry such as Canon USA, Inc., Fujitsu Ltd., Toshiba Ltd. and Xerox Corp. However, until recently, most laser printers were high-end machines costing tens and hundreds of thousands of dollars each and were used primarily by very large data processing installations. Only recently, Canon developed a low-cost laser printing system, which derives from its personal copiers, and this started the revolution through licensing to computer and office equipment manufacturers. Hewlett-Packard Co. was among the first American computer manufacturers to offer a low-cost laser printer also based on the Canon system.

General Optronics Corp., which is already a supplier of medium-cost laser printers; Xerox and Ricoh Co. are expected to introduce competitive devices in the near future. This will mean present and future laser printer suppliers will have a much greater choice of basic laser printer systems to develop their final products, and the competition will get hotter.

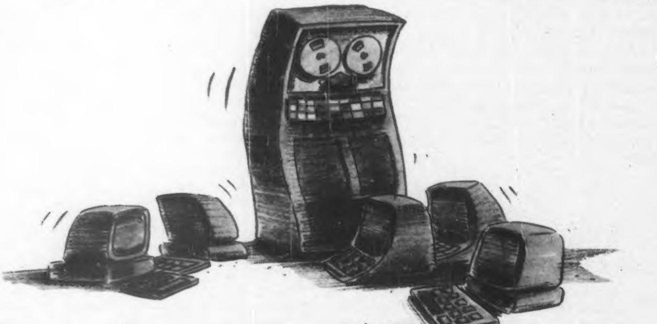
Quality Micro Systems, Inc. was among the first independent laser printer start-ups that used the Canon mechanism to develop a low-cost printer. The company got a lot of attention from investors in early 1983 when it went public at $17 per share in an offering co-managed by Dean Witter Reynolds, Inc. and E. F. Hutton & Co.

Perq Systems, a manufacturer of engineering workstations, is another supplier of low-cost laser printers. The company received $7.7 million in funding through a private placement made by Shearson/American Express Co. a year ago and appears to be a likely candidate for a public offering in the not-too-distant future.

Because laser printing technology is controlled by a few large Japanese and American corporate giants, suppliers of low-cost laser printers can mostly compete solely on price, and it may be hard for some of the independents to capture a big enough market share to become profitable operations.

However, there is another business and investment opportunity associated with laser printers that may prove to be much more lucrative to new start-ups entering the market. It involves the design and manufacture of laser printer controllers customized with very large-scale integration microchips to tailor those devices to exactly what the end user wants.

Szuprowicz is president of 21st Century Research of North Bergen, N.J., and publisher of Supergrowth Technology USA.



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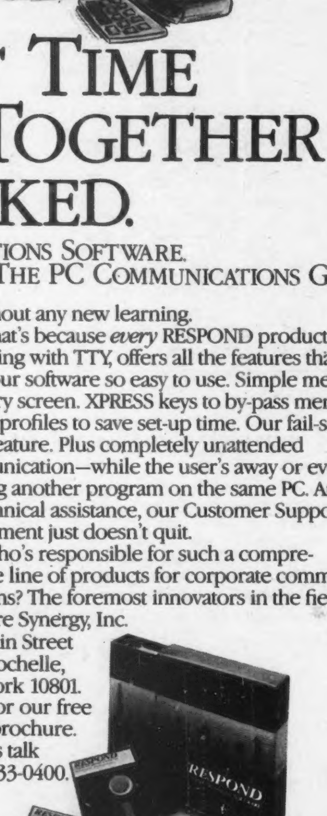

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CW 1105

TI's $85.8 million quarter falls short of profits goal

DALLAS — Texas Instruments, Inc. recently reported third-quarter profits of $85.8 million, or $3.54 per share, compared with a year-earlier loss of $110.8 million, or $4.64 per share, that resulted from the company's withdrawal from the home computer market. The earnings were marginally below the second-quarter profits of $85.9 million, or $3.57 per share.

TI posted an estimated $13 million shortfall in third-quarter profits, owing to the recent decision by the U.S. Department of Defense to stop receiving shipments of equipment containing TI components, for which testing procedures have been disputed.

Revenues for the quarter were $1.42 billion, compared to year-earlier revenues of $1 billion.

TI said semiconductor shipments during the third quarter declined from the levels of the first six months.

A spokesman for the company also said data systems shipments were up moderately from year-earlier levels, but "financial results [for data systems] remain well below acceptable levels."

Gould profits rise 17.6%; quarter revenues up 15.7%

ROLLING MEADOWS, Ill. — Gould, Inc. recently reported that its profit for the latest quarter rose 17.6% to $22.5 million, or 50 cents a share, from $19.1 million, or 42 cents a share, a year ago.

Revenues for the third quarter ended Sept. 30 rose 15.7% to $389.8 million, compared with $336.8 million last year.

William T. Ylvisaker, Gould's chairman and chief executive officer, attributed the increase in earnings per share to "improved computer operating results, as well as to gains on foreign exchange and the disposition of certain assets. The latter two items accounted for an after-tax income of $4.1 million, or 9 cents a share."

Xidex moves to buy up stock in subsidiary

MOUNTAIN VIEW, Calif. — Xidex Corp., which recently proposed to acquire Dysan Corp. [CW, Oct. 29], also announced it has made an offer to acquire the remaining stock of its 77% owned subsidiary, Xidex Magnetics Corp.

Xidex offered to exchange each share of Magnetics stock for 1.12 shares of the parent company stock. The merger is conditional upon the approval of a majority vote of all Magnetics stock not owned by Xidex. Magnetics' independent board of directors said it will hire an investment banking firm to evaluate the offer.

Xidex, which made an offer valued at $212 million to merge Dysan into Xidex, also recently reported a quarterly profit of $5.8 million, or 25 cents per share, on revenues of $47 million. For the comparable quarter a year earlier, Xidex reported a profit of $4.7 million, or 22 cents per share, on revenues of $38.5 million.

A Xidex spokesman said the positive sales report was largely due to the performance of Xidex Magnetics.

Xidex Magnetics reported a quarterly profit of $1.8 million, or 14 cents per share, on revenues of $19.1 million. Year-earlier figures, prior to Xidex Magnetics going public, showed a profit of $440,000, or 3 cents per share, on revenues of $6.6 million.

Mohawk Data signs Edelman

PARSIPPANY, N.Y. — Mohawk Data Sciences Corp. said last week it named dissident shareholder Asher B. Edelman vice-chairman of the company, ending Edelman's proposal to buy out the company.

Edelman, who was the catalyst of Management Assistance, Inc.'s selloff of its operating assets, said earlier he would attempt to buy Mohawk Data for $250 million of securities unless he was named chairman.

Earlier in October, Ralph H. O'Brien resigned as chairman and president of the firm. Acting chairman Francis P. Lucier was named chairman and chief executive officer at the same time Edelman was named vice-chairman. The firm said the post of president will remain vacant.

Mohawk Data has experienced financial setbacks this year and told shareholders at its recent annual meeting that it expects to post a $19 million loss for the second quarter.

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November 26
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In this issue, users and vendors will comment on how terminals are making computers more responsive to organizational needs. Topics include: how to get the most out of dumb terminals; an update on smart and intelligent terminals; and guidelines for determining terminal needs and selecting the equipment to meet them.
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CW 1105

Optical technology not critical to CAD's near future

Computervision exec says VLSI, memory advances to affect market in next five years

By Maura McEnaney
CW Staff

CAMBRIDGE, Mass. — Advances in optical technology will not have a profound effect on the computer-aided design (CAD) industry over the next five years, a computer executive said here recently.

Speaking at the American Society of Mechanical Engineers Design Automation Conference, James Cook, director of technology research at Computervision Corp., told the audience that advances in optical computing, optical fibers, gallium arsenide and artificial intelligence will not affect a market that is busy consolidating its technology explosion of the last five years. Currently, he said, the industry is busy incorporating past advances in color, solids, dynamics and networking.

Over the next five years, Cook said, the CAD market will focus on integrating CAD into the design market. Optical computers "do not appear about to be commercially viable," Cook said. Magnetic disks will not be easily replaced with optical disks, because they are too slow and are not easily erased, he noted. They will, however, be used for on-line assistance and documentation, he said.

While most of the workstations will be neither state-of-the-art nor special-purpose systems, they will incorporate "steady advances in computation and memory capacity," Cook stated.

Technological gains

Among the technological gains that will affect the industry are advances in very large-scale integration (VLSI). According to Cook, VLSI and rotating memories will double in capacity every two years at half the price. "Consequently, by the end of the '80s, 1 to 10Mflops [million floating-point operations per second] will be commonplace in CAD workstations," Cook said.

In addition, random-access memory in the range of 4M to 16M bytes will be commonplace in CAD workstations, and the large memories will be used for all interactive files, he said. Cook predicted that by 1990, "superminicomputers will offer 10 to 100 Mflops, and the top of the line computation processors will extend beyond 1 Gflop."

Gallium-arsenide-based semiconductors will not appear in the workstations, Cook said. Instead, he pointed out, they will be confined to delivering an increase in processing power to high-speed computing and communications products.

Wang revenues, earnings reach milestone

LOWELL, Mass. — An Wang, founder, chairman and chief executive officer of Wang Laboratories, Inc., recently dismissed criticism of the company's overall strategy and projected a 30% growth in revenues and earnings for fiscal 1985.

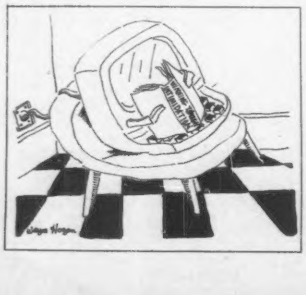
"Wang Labs has had another very good year," Wang said, kicking off the company's annual meeting here recently. He noted that the company had record revenues, earnings and new orders for the year ended June 30. It also reached two financial milestones: Revenues exceeded $2 billion, and earnings topped $200 million.

Wang noted that orders and revenues grew by 34% and 42%, respectively, compared with a year earlier. Profits were up 38%.

He termed the revenue increase extraordinary in light of the strength of the U.S. dollar relative to foreign currencies, a situation that hurt international sales.

Wang was asked by one shareholder about press reports critical of the company's marketing strategy and inability to diversify beyond the office automation market. "I don't know what they are concerned about," Wang said, referring to the company's financial results as an indicator of success.

Another shareholder questioned why the company's Professional Image Computer — introduced last year — is experiencing sluggish sales. "Here is something relatively new, and it takes a lot of missionary work to put it together," Wang said. "Any new product needs development while you explore the marketing possibilities."



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Robot sales seen falling short of forecasts

FRAMINGHAM, Mass. — Decreasing demand for robots in the auto industry is one factor that will cause the U.S. robotics industry to fail to meet predictions of $1 billion in sales for 1990.

A report from Framingham, Mass.-based International Data Corp. (IDC) claimed that a more realistic estimate for 1990 robot sales is about $677 million.

According to Peter Cohen, an IDC robotics industry analyst who helped produce the report, a growing industry awareness that robots are entire systems, not just mechanical arms and controllers, will also act to reduce sales from what other analysts had predicted earlier.

Systems sales, however, are not covered in the IDC report. The report admitted that such sales may be "considerably higher" than the $246 million in sales it predicted for the robot industry next year. The report was based on interviews with about 25 robot makers, six robot systems vendors and 50 industrial users, Cohen said.

Laura Conigliaro, robotics analyst for Prudential Bache Securities in New York, said she still stands by her prediction of $1.3 billion in robot industry sales by 1990, but noted that the estimate includes systems sales. This year, she predicted, the total sales of robot systems and hardware from just the top three players in the U.S. robotics mart — GMF Robotics, Unimation, Inc. and Cincinnati Milacron, Inc. — will total about $190 million. IDC's report estimated total U.S. 1984 robot sales at $197 million.

The report also noted that most of the 9,965 robots now installed in the U.S. are employed in spot welding and materials handling but predicted that by the end of the decade, assembly robots will rise from their current 1% to 25% of the base.

Auto industry purchases, currently 60% of the robot market, will decline by half by the end of the decade, the report also predicted.

The report costs $1,000 from IDC at 5 Speen St., Framingham, Mass. 01701.

AEA releases high-tech job predictions

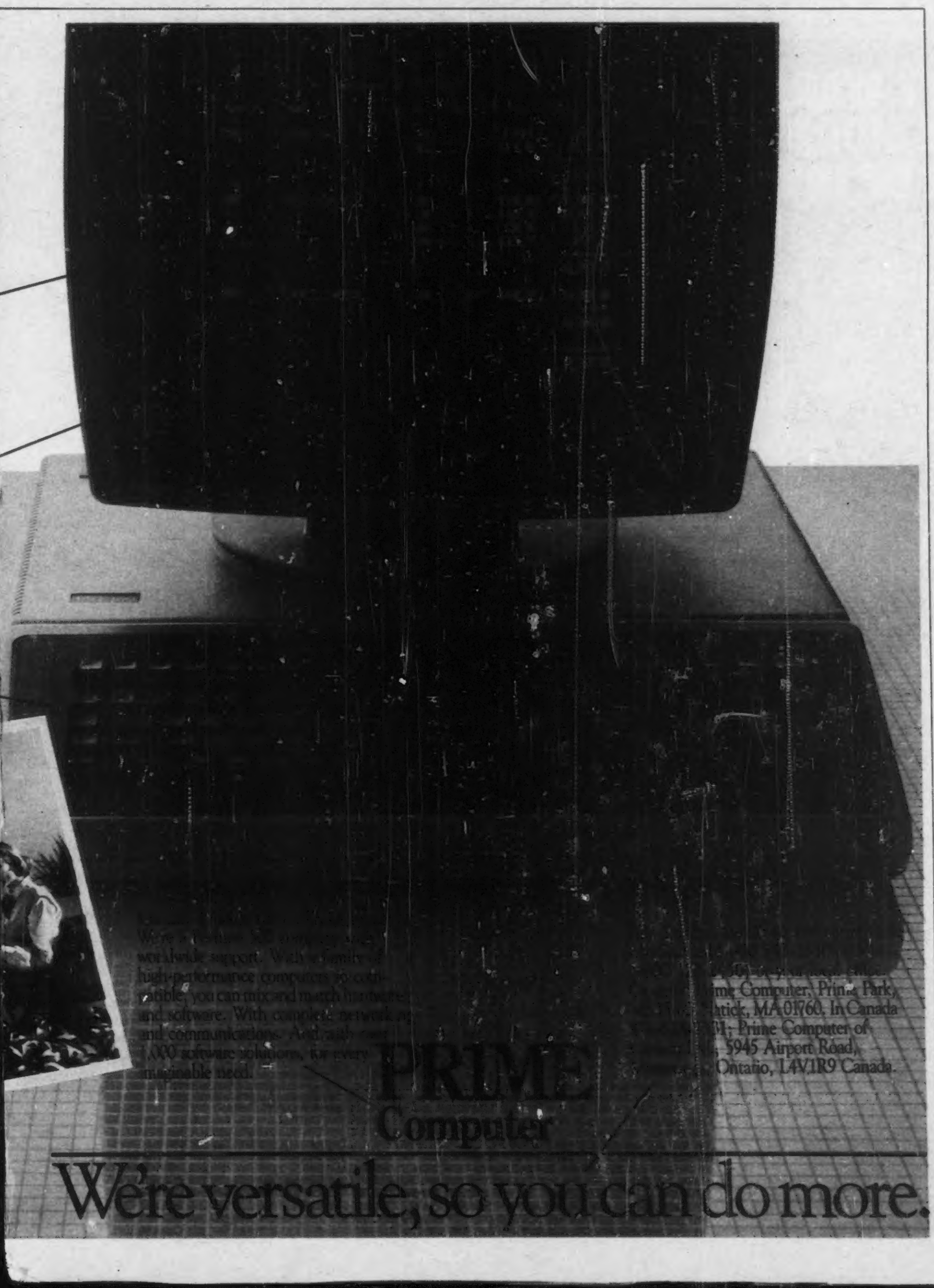
PALO ALTO, Calif. — Employment in the electronics and information technology industries has climbed to more than 2.3 million workers, possibly making it the largest manufacturing sector in the U.S., according to the American Electronics Association (AEA).

The association reached this estimate by combining statistics from the U.S. Department of Labor and the Bureau of Labor, along with its own definition of the electronics industries. The second largest manufacturing sector is transportation equipment with slightly fewer than 2 million employees, the association said.

"Although our companies have been an ever-increasing source of new jobs for more than 25 years, the most prolific growth has occurred since 1980," said Dean O. Morton, association chairman and chief operating officer. Morton noted that in 1983 alone, the electronics industry added nearly 250,000 workers, a 10% boost in total employment.

When employment in all industries — both manufacturing and nonmanufacturing — is considered, the electronics industry lands in sixth place, the association said.

The association's definition of the electronics industry includes all firms that manufacture electronic components and products or systems requiring electronic components. It also includes companies providing research and development or engineering services, as well as software firms. It does not include firms that provide telecommunications or data processing services or distributors and retailers of electronic products or services.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Altos targets micro wares at Fortune 1,000 firms

By Eric Bender
CW Staff

SAN JOSE, Calif. — "Corporate America is where we're going," Altos Computer Systems, Inc.'s founder and chairman David Jackson declared recently.

After growing in seven years from a start-up company to one with $130 million in revenues by offering multiuser microcomputers to small and medium-size businesses, Altos is now targeting the vast opportunities within the Fortune 1,000 market, Jackson said.

On the product side, Altos today "is just on the periphery of what the large companies need," he acknowledged in an interview here last month. "We need bigger, better and less expensive computers.

"I'm betting the company on [AT&T's] Unix, networking, multiuser systems and distributed data bases," Jackson said. "We have 150 engineers now; two years ago, it was 20. They're all doing networking, Unix systems and bigger computers."

Altos plans to build larger systems around industry standards, such as AT&T's Unix and Intel Corp. 8086 family microprocessors, using very large-scale integration memory chips, new disk storage systems and other state-of-the-art components, Jackson said. The goal is high-performance 16- and 32-bit systems with high storage capabilities, a standard operating system, built-in networking and support "for a revolutionary price — $5,000 instead of $50,000 or $500,000," he suggested.

Jackson emphasized the benefits of Altos' proprietary Worknet networking built into all existing products and into low-end and high-end products scheduled for introduction this month.

"All the pieces really are there" for networking between any Altos products, he said. "You can call up a file anywhere on the net; you just have to know the file's physical location." Gateways also are available to other communications environments, he noted. In the long run, the networking will be transparent to users, he said. "We see the whole world as a network."

Altos will attack the large corporate market through OEM and value-added remarketer channels, Jackson indicated. "IBM's sell is to get to the DP manager," he noted. "That strikes me as a market IBM has locked up today."

In the near term, Jackson expected relatively slight growth in overall sales. "Growth comes from the introduction of new products, and we haven't introduced anything significant in the last six months." Additionally, he pointed out that "there's too much product at the lower end of the market, and it has some effect on our business. When there's a surfeit of [personal computers], our market doesn't grow as fast."

Jackson also predicted that there is a big recession coming and said he has postponed plans to rent more space, although employees "are screaming for more room."

Over the long run, "if we're doing well, we grow by 50% to 100% per year," Jackson said. "If we're doing poorly, we have a year of no growth." He forecast that in five years, Altos will be a billion-dollar company.

Altos currently has about $64 million cash in hand and $110 million in net assets, Jackson said.

"We're a money-making company," he remarked. "Some people come to work to compete. I don't. I come here each day to make 20% pretax [profit].

"I'm building an IBM or a Hewlett-Packard [Co.]. I admire what they're doing, and I want to build something like that in my lifetime."

Security mart growth a safe bet despite limitations

NORWALK, Conn. — Even though the computer security marketplace is limited in many ways, it is beginning to show growth curves that will see new entrants and new products in years ahead, a recent report from International Resource Development, Inc. (IRD) here predicted.

The 220-page report, *Computer Security — Hardware, Software, Systems and Facilities Markets*, reviews markets and opportunities for security products for mainframes, minicomputers, microcomputers and data communications systems.

Computer security has steadily become more important, especially since computing power has been pushed to the end-user level, the report stated.

With so many microcomputers, asynchronous minicomputers and data processing networks distributed from mainframes, "Hundreds of thousands of people now know how to access any unprotected computer system linked to a public — or at least accessible — communications link," the report stated.

Dial-up links are most vulnerable, but point-to-point leased lines, bisynchronous terminal connections and microwave communications networks can also be compromised, the report suggested. The ability of most organizations to respond to security threats has not kept pace with the growth of knowledge about computer systems, it further suggested.

"If teenagers using home computers can enter and disrupt the files in mainframes belonging to national defense contractors, major health care organizations, public data base and videotex service providers, imagine the havoc professionals have [wreaked] and will continue to wreak on these systems," the report stated. The response of most major organizations has been inadequate so far.

The report said the computer security market is:

■ Incident-driven. Organizations do not face the need for adequate security until disaster strikes.

■ Technology-driven. Vendors tend to be naive in addressing the market and often develop products for which no ready market is discerned. For example, vendors talked of selling expensive systems to automated teller machine networks before banking consumers had ever heard of the technology.

■ Limited in size. Potential markets are limited to small percentages of the total market. For example, only 20% of the 140,000 to 160,000 personal computers estimated to be on corporate desktops by the end of 1985 will have modems attached. Of that number, fewer than 10% are candidates for security devices.

■ Levels of security. Good security management weighs the risk of losing the information resource against the cost of protecting it. "If the cost is higher than the risk, the chance of a purchase is significantly lower," the report stated, adding that security for small and low-cost systems will be harder to justify.

Despite the limits, "The marketplace is expected to grow rapidly during the next two or three years as installations of security products catch up with the installation of microcomputers, local-area networks and distributed data processing networks," the report stated.

The price for the computer security report is $1,850, the company said.

More information may be obtained from IRD, 6 Prowitt St., Norwalk, Conn. 06855.

Boeing becomes member of MCC research group

By Kathleen Sullivan
CW West Coast Bureau

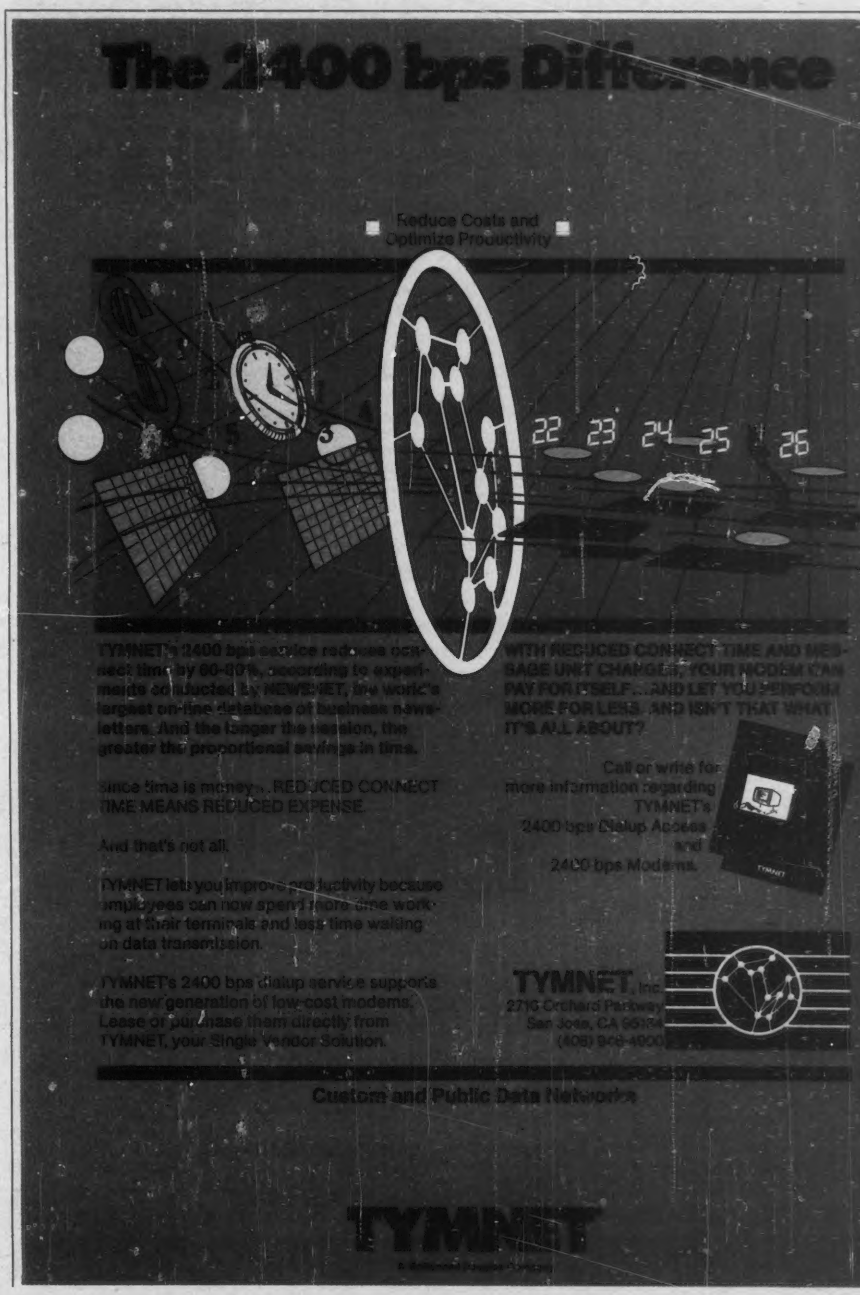
SEATTLE — The Boeing Co. recently announced it has joined the consortium of U.S. firms that comprise the Microelectronics and Computer Technology Corp. (MCC), a high-technology research and development venture based in Austin, Texas.

Harold Carr, Boeing's corporate director of public relations, said the firm decided to join MCC because it believes the research group is "at the forefront of electronics research" in the U.S.

Founded in response to Japan's announcement of a decade-long research project into a new generation of computers based on artificial intelligence, MCC now claims a roster of 19 firms.

Among the consortium's members are Advanced Micro Devices, Inc., Digital Equipment Corp., Honeywell, Inc., Lockheed Missiles and Space Co. and NCR Corp.

The group has established task forces in four research areas: computer-aided design for very large-scale integration circuitry, software technology, semiconductor packaging and advanced computer architectures, including advanced data base systems, human interfaces, parallel processing and artificial intelligence, with an emphasis on knowledge-based systems.



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SUPERSHORTS

Advanced Computer Communications has announced the opening of a branch office in the U.K. to support sales and service of its data communications products in Europe.

■

The formation of **Access Learning Technology Corp.** was announced by its founders, David Whitney, Ronald Whitney and Del Penny. Focus of the company will be on developing the next generation of computer-based instructional technology.

■

Digital Equipment Corp. has announced the formation of the **Telecommunications Industry Marketing Group,** created to focus the company's marketing efforts with strategic worldwide telecommunications companies, equipment manufacturers and new network services companies.

■

An Institute for Information Storage Technology is being established this fall by the **University of Santa Clara** (Calif.) School of Engineering. The program's first sponsor, with a five-year grant of $250,000, is Seagate Technology, Inc., with additional ongoing support coming from Verbatim Corp.

■

Racal-Milgo, Inc. announced the formation of a multiplexer division, the seventh of the company's business units. The new division will be directed by John Rowbotham, who has been named general manager. Mike Marshall has been promoted to the position of senior director of engineering at the division.

■

Franklin Sudbury Associates of Sudbury, Mass., recently announced a service to provide trade show exhibitors with assistance in show selection, preshow planning and promotion and exhibit design.

■

Computer Learning Systems, Inc. announced it has formed a Microdisk Services division, which will provide commercial, governmental and educational institutions with disk duplication, complete software packaging services and supplies.

■

The French corporation **Matra Group**, has established a U.S. subsidiary, California-based **Matra Communication, Inc.**, to market Matra's Scanset line of voice/data desktop terminals in the U.S.

■

BKW, Inc. and **Perle Systems, Inc.** have announced the signing of an agreement designed to increase dramatically the number and type of banks and financial institutions served by each.

Under the new terms of the agreement, BKW will provide its customer banks with network controllers specifically designed by Perle to allow Nashua, N.H.-based BKW's pulse system to interface with a variety of automated teller machines and other devices and terminals.

Perle, a subsidiary of Toronto-based **Perle Systems Ltd.**, has also opened its headquarters in Oakbrook, Ill., and announced the appointment of Leon Loubser as sales manager for the U.S.

■

Verdix Corp. and **GEC Software Ltd.** announced the signing of a major licensing agreement under which GEC Software will act as an OEM for the Verdix Ada Development System in the U.K. and will have OEM marketing rights in NATO countries, Australia and New Zealand.

■

Digital Equipment Corp. opened a new demonstration center in Philadelphia for computer-aided design and manufacturing (CAD/CAM) and office automation. As one of DEC's 16 CAD/CAM facilities worldwide, the center will serve as an application center for technology and as an information center for engineers and manufacturers in the area.

■

Telecom Plus International, Inc. and **Siemens Communications Systems, Inc.**, a wholly owned subsidiary of West Germany's Siemens AG, jointly announced the formation of **Tel-Plus Communications, Inc.** The purpose of the new company is to pursue the current and future opportunities in the field of telecommunications.

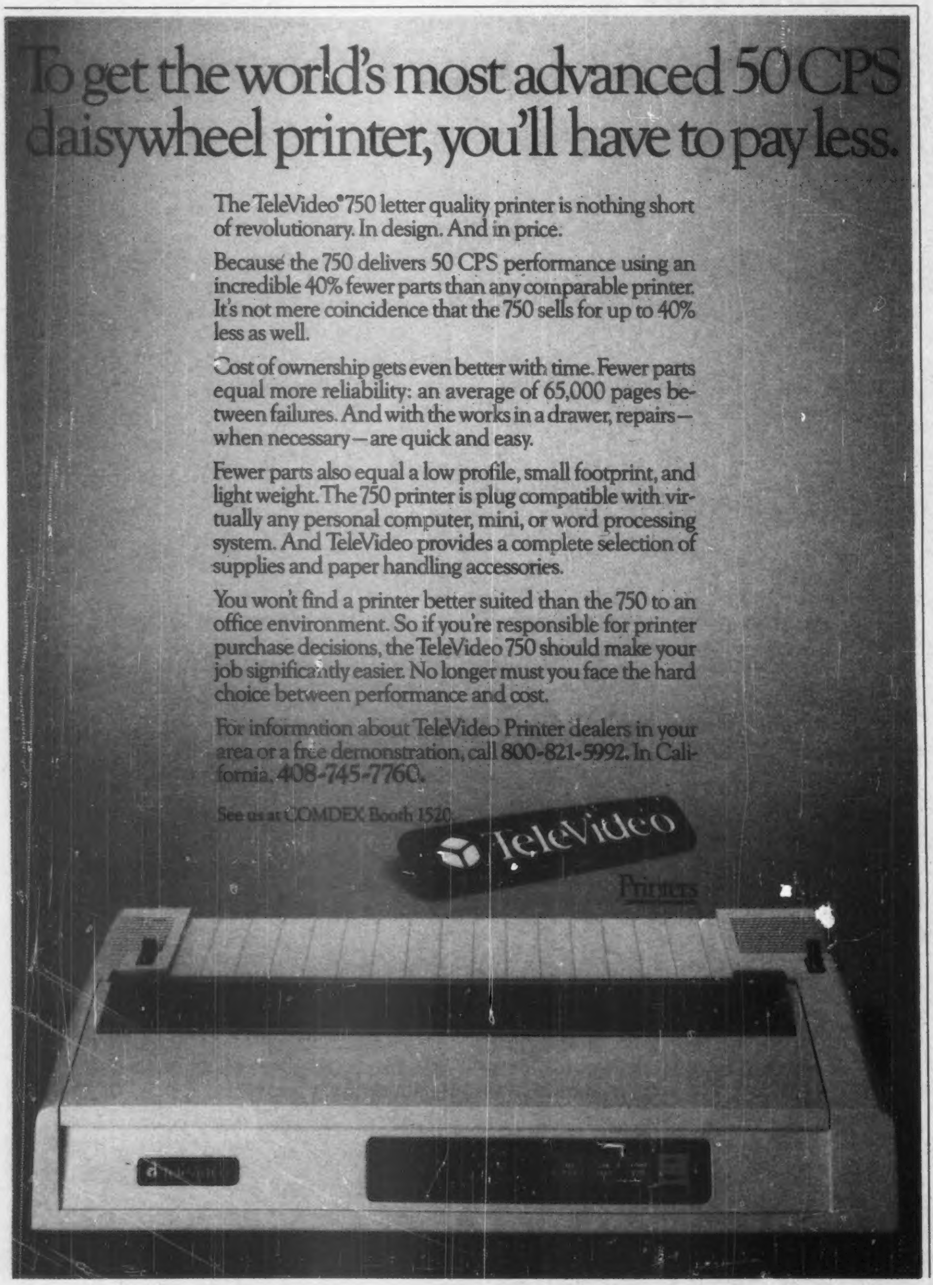
Siemens will provide $60 million and will obtain a 20% equity interest. The arrangement provides for a 10-year agreement with a potential value in excess of $600 million, involving a joint effort in the distribution and development of office communications products and related systems.

Burroughs, RTI ink OEM pact

BERKELEY, Calif. — Relational Technology, Inc. (RTI), based here, and Detroit-based Burroughs Corp. announced they have signed an OEM agreement granting Burroughs the right to distribute RTI's Ingres relational data base management software with Burroughs' recently introduced XE 550 supermicrocomputer.

Under the exclusive agreement, Ingres will be the only third-party data base management program that Burroughs will directly market with the XE 550. Burroughs will assume responsibility for support of the software.

A single-application processor version will be priced at $6,000, and a multiple-application processor version will cost $9,000, according to RTI.



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EXECUTIVE CORNER

Werner L. Frank has been named to the new position of president of Sterling Software, Inc.'s systems software group and will be elected by the board of directors as executive vice-president of Sterling.

■

James W. Warren has joined Science Management Corp.'s Seicom, Inc. as president.

■

Louis W. Abbott has resigned as president and chief operating officer and as a director of Wavetek Corp.

■

Owen Brown has been named president and chief executive officer of Parallel Computers, Inc., succeeding **Charles W. Ryle**, who has been named chairman of the board of directors.

■

Thomas B. Towers has been named president of Mnemos, Inc.

■

Edward P. Basquill has been named president of Telecom Plus Software Systems, Inc.

■

Thomas B. Walkup has been named president of the marketing division for GTE Communication Systems Corp., with overall responsibility for domestic marketing operations of the Phoenix-based telecommunications firm.

■

Jacob Atkin has been appointed to the position of president at Stromberg-Carlson Business Communication Systems.

■

Richard Abraham has been elected by Gould, Inc.'s board of directors as executive vice-president of electronic components.

■

Ralph H. O'Brien has resigned as chairman, chief executive and president of Mohawk Data Sciences Corp. **Francis P. Lucier**, a Mohawk director and former chairman of the Black & Decker Manufacturing Co., will serve as chairman until a new chief executive is elected.

O'Brien, who headed the company for nearly a decade, will remain as a Mohawk director and chairman of its executive committee, according to John C. Walters, the company's senior vice-president and chief legal officer.

■

Dr. Arnold Miller, vice-president and general manager of the electronics division of Xerox Corp., has been elected a corporate vice-president by the company's board of directors.

■

Francis J. Gaudette has joined Microsoft Corp. as vice-president of finance and administration.

■

David Kroenke is joining Microrim, Inc. as vice-president of research and development.

■

Richard H. Bierly has been elected senior vice-president of human resources and management services, and **Reto Braun** has been elected to corporate vice-president at Burroughs Corp.

■

Howard Smith has been named vice-president of engineering at Silicon Graphics, Inc.

■

Roger C. Ferguson has been appointed to the positions of vice-president of finance and administration and chief financial officer at Sytek, Inc. Ferguson had previously worked for General Instrument Corp. and IBM.

■

James Frame has been appointed executive vice-president and chief operating officer of Higher Order Software, Inc.

■

Gerald T. Giesler has been appointed executive vice-president at Commercial Software, Inc.

■

Edward J. Somol, Jr. has been elected vice-president of Cullinet Software, Inc.

■

Thomas Nies has been elected chairman of the board, chief execu-

See **EXECS** page 105

Kodak division to manufacture magnetic media

NEW YORK — Eastman Kodak Co. recently announced the formation of an Electronic Media Manufacturing Division to produce magnetic media products.

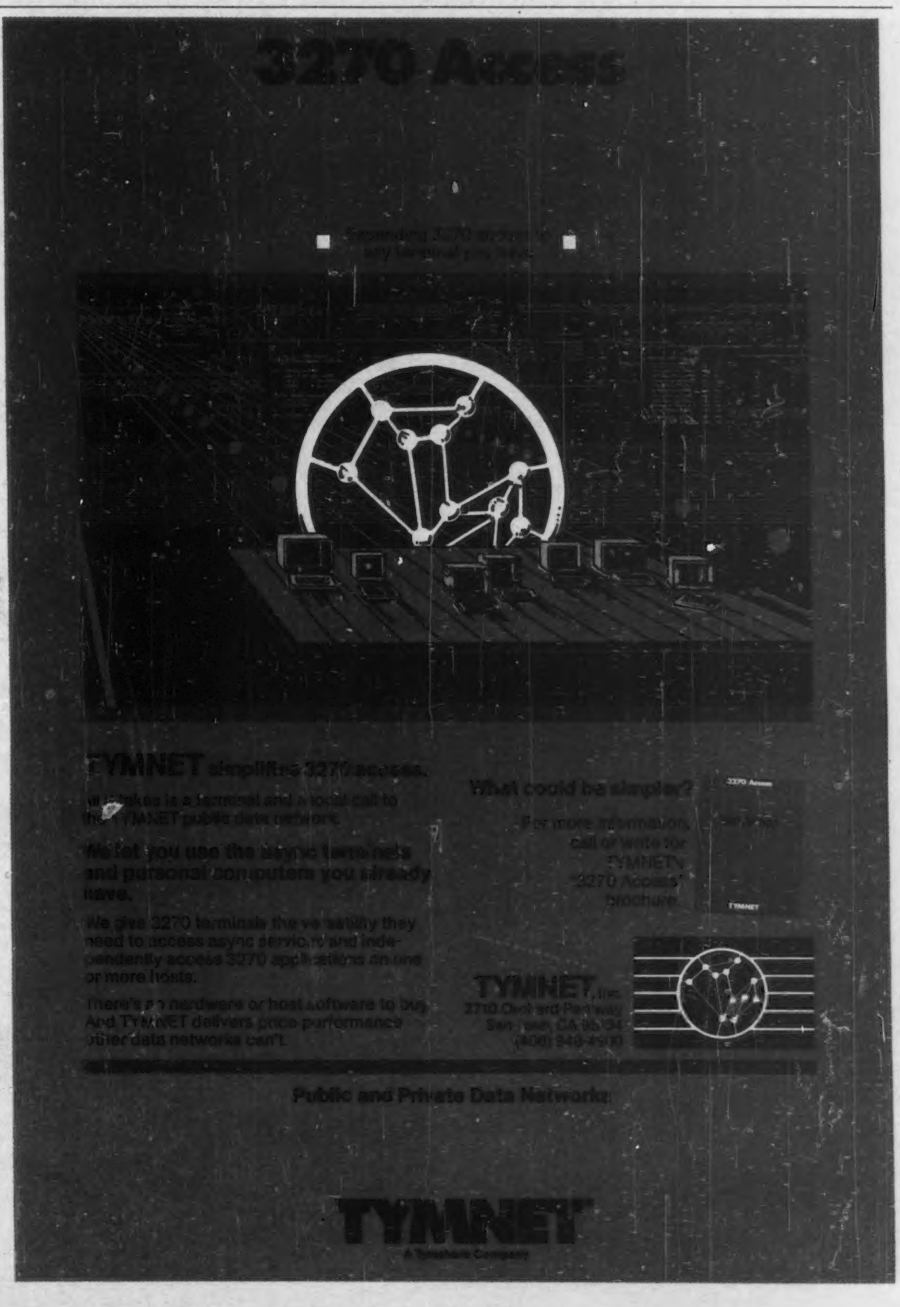
Kodak, a manufacturer and distributor of cameras and film, also announced that it intends to purchase and resell diskettes from other manufacturers during the interim period until the new division begins production.

The division will include two manufacturing facilities, one to coat magnetic media for diskettes and a finishing and formatting facility in its existing facility in Guadalajara, Mexico.

The company said it is currently involved in discussions with Mexican officials.

The company said it intended to build market recognition with OEM products and expects to have established a solid customer base by the time it begins manufacturing its own products.

Eastman Kodak said the new division will not focus solely on flexible disks, but will produce other storage products, such as optical disks, in the future.



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EXECS

from page 103

tive officer, at Cincom Systems, Inc. Succeeding Nies as president and chief operating officer is **Dennis Yablonsky**. The following have been promoted to the positions of vice-president: **Gerald Shawhan**, finance and administration; **Barry Sargent**, international sales; **Robin Adair**, indirect marketing; **Steven Whiteman**, North American operations; and **Stanley J. Sewall**, research and development. **Donald Campbell** has been promoted to director, marketing and product planning.

■

Donald M. McLean has been promoted to vice-president and director of advanced projects for the MacNeal-Schwendler Corp.

■

W. Herbert White Jr. has been named senior vice-president of Cadlinc, Inc.

■

William M. Morse has been appointed vice-president at Pick Systems.

■

Roger von Holtz has been appointed chief executive officer at DBI Software Products.

■

Daniel F. Fichter has joined Arthur Young's mid-Atlantic consulting group as a manager of the Information Technology Group.

■

Allen H. Michels has been promoted to the position of chairman of Convergent Technologies, Inc.

■

Owen Brown has been named president and chief executive officer of Parallel Computers, Inc., succeeding **Charles W. Ryle**, who has been named chairman of the board of directors.

■

C. Richard Moore has accepted the position of president and chief operating officer at Valid Logic Systems, Inc.

■

John M. Purtell Jr. has been appointed president at Compushop, Inc.

■

Walt Menetrey has been named president and chief operating officer of Applied Circuit Technology, Inc.

■

Roger C. Cady has been named president and chief executive officer at Raster Technologies, Inc. Cady was previously vice-president and group manager of Digital Equipment Corp.'s manufacturing, distribution and control group. **Louis J. Doctor** has been promoted from president to chairman of the board.

■

Hiram T. French has been named president and chief operating officer of the Cadware Group Ltd.

■

Luigi Mercurio has been named president and chief executive officer of David Systems, Inc.

■

Hicks B. Waldron has been named director, chairman, president and chief executive officer of Avon Products, Inc. in New York.

■

Hewlett-Packard Co. announced the election of a member to its board of directors, two new vice-presidents and the promotion of three of its managers to key financial positions.

The new vice-presidents are **Johan F. Blokker** and **Robert P. Wayman**. Wayman has also been elected chief financial officer.

George F. Newman Jr. has been appointed treasurer.

The positions of controller-marketing and controller-product groups have been created, and appointed to them were, respectively, **John M. Russell** and **Raymond W. Cookingham**.

■

Paul Busse has resigned as senior vice-president and chief financial officer of System Industries, Inc. to pursue other business interests.

Paul Emery has joined the firm as senior vice-president, finance and corporate planning, chief financial officer and secretary. Also, **Richard LaBarbara** has joined as senior vice-president, field engineering.

■

Scientific Leasing, Inc. has announced the following promotions: **David J. Spiegel**, vice-president, secretary, general counsel; **Bryna K. Hausman**, vice-president and treasurer; and **Robert P. Medwid**, vice-president, financial analysis, reporting.

■

Michael K. Mason has been appointed vice-president, western operations, for Sperry Corp.'s Information Systems Group.

■

Gordon Van Campen has been named director, manufacturing operations by Natural Microsystems Corp.

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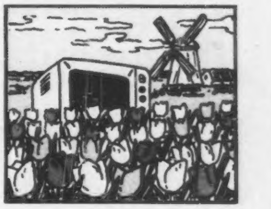

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The Netherlands ranks high in Western Europe for installed general purpose computers. And, according to figures from International Data Corporation, the world's leading information industry market research firm, it has an installed value of $1.7 billion. In 1983, an estimated $380 million was spent on purchases of computer and peripheral equipment. At the present time, there are 4,000 larger computers installed with a projected 15% annual increase.

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HYPERION

from page 93

as board members for Comterm, which was then successfully producing terminals compatible with IBM mainframes. A decision to merge Bytec with Comterm was made by the middle of that summer. Once approved, Cowpland became chairman, St. John remained president of its investment division, while Comterm President Laurent Nadeau remained atop the head office.

While this merger may have alleviated financing problems, many see it as furthering the damage to Hyperion.

"The ultimate takeover of Bytec came at a bad time," said Robert Payne, senior analyst with International Data Corp. (Canada) Ltd. of Toronto. "Any merger is hard on a company. Bytec was hoping for some benefits, but the elements [in the market] were moving too quickly, and the companies couldn't digest the merger quickly enough."

Paul Barsley, former vice-president of engineering at Bytec, said the merger drained management resources. "The top management was tied up in trying to organize a complex merger and still balance that by keeping one eye on the business," he said.

All of this turmoil took place against the backdrop of an increasingly competitive micro market. The Hyperion, as an IBM-compatible, never achieved the level of compatibility others boasted — notably the Compaq Computer Corp. portable — and this weakened its position considerably.

"You would never know if it [the Hyperion] would run the software or not, so it didn't sell well," said Ronny Ward, executive vice-president of Fortune Computing, Inc. in Dallas.

> *This turmoil took place against the backdrop of an increasingly competitive micro market. The Hyperion, as an IBM-compatible, never achieved the level of compatibility others boasted, and this weakened its position considerably.*

Price-cutting also made life difficult for the Hyperion. "We lowered our prices on an ongoing basis," said St. John, now vice-president of corporate development for Comterm. "But we had to maintain a certain margin, and prices were continually driven down by IBM."

Several months ago, analysts began waiting in earnest for the Hyperion's demise. At least one analyst, Graeme Kirkland, of Third Wave Investing, declared the compatible war over and suggested that the Hyperion's technology would be redirected into Comterm's terminal products. As it turns out, he hit the nail on the head.

Only two weeks before the Hyperion was put to rest, Comterm introduced an integrated office support system that signaled a departure from the retail micro market. Based on the company's success as a maker of 3270 emulation terminals, the system includes a full complement of Comterm printers; file, print and remote access servers; communications gateways; integrated graphics and teletext.

A company spokesman reiterated that the machine, not the Hyperion technology, has been terminated, and Comterm's foray into the consumer market was scrapped along with it. Now the company will concentrate exclusively on the turf it has known best all along — direct sales to corporations and institutions.

STC

from page 93

cycle, a classical cycle for would-be challengers to IBM. STC needs to be able to spend a lot of money to keep up with IBM's rapidly increasing pace of product introductions. To do that, it needs to generate money, but with IBM cutting prices on its current equipment, STC is finding that it cannot make much profit on its own equipment that is just now reaching full production capacity.

With STC technically in default on current loans and with its long-term debt being downgraded, the cost of borrowing money to keep up with IBM will prove to be suicidally expensive.

With few financing options and low stock prices, the company would seem ripe for plucking by a larger corporation.

Perhaps the wisest alternative might be for STC to seek out a white knight — a well-heeled merger partner that could stabilize the current financial situation and provide the backing to prepare for a market situation that might soon see no domestic competitor for IBM in the high-end mass storage market. In this scenario, should Memorex fade from the pack, STC would be all alone in the domestic PCM market as IBM wages war against the Japanese.

UCS

from page 93

in used IBM equipment, it offers standard IBM colors. In addition to the ever-popular sky blue on older equipment and the more recent classic blue, UCS has flame red and garnet rose on its palette.

Reconditioning, however, is more than just cosmetics, LaRocca said.

If an IBM system is being shipped to a European customer, it must be altered to operate at 50Hz instead of the 60Hz that is standard in this country, said Alfred J. Cosenza, vice-president for reconditioning.

Customers of used equipment frequently want a processor's memory upgraded to the maximum allowed for that model line, Cosenza said, and a common feature added to 3033s is data streaming, an adaptation that allows the unit to use modern disk drives.

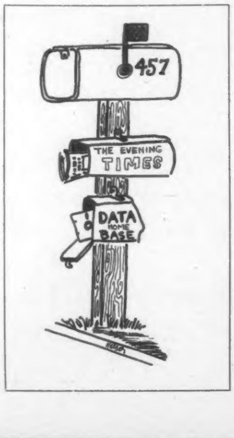
Any such work must be done to IBM specifications so that a customer's used equipment can be included in a standard IBM maintenance contract. UCS buys maintenance instructions from IBM on each model line and trains its own technicians, LaRocca said.

The widespread use of microcomputers has yet to develop its own used equipment market, "but we expect it will come soon," LaRocca said.

UCS recently attempted to enlarge its business by coming up with its own product, a magnetic tape backup for the IBM Series/1.

"There's a great need in the Series/1 for backup. It has a fixed disk that can't be removed," said UCS President John DiGiacomo. UCS hopes to come up with niche-filling products that may be a low priority for a major manufacturer, but which have the potential of adding millions of dollars to UCS' business, he said.

The most talented third-party peripheral makers have been attracted to the microcomputer market, and at the moment, there is "a vacuum of talent" designing peripherals for minicomputers and mainframes, he said.



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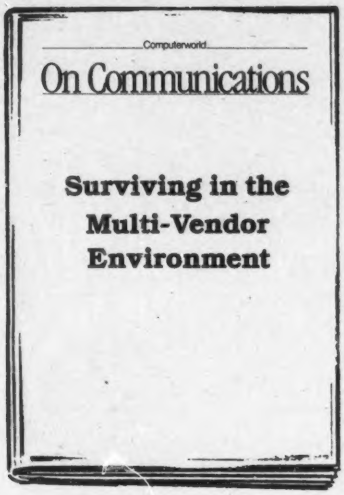

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NICKELS AND DIMES

Telco Systems, Inc. reported revenues for the fourth quarter ended Aug. 31 were down $1.5 million, or 25 cents per share, compared with $474,000, or a loss of 9 cents per share in the same quarter one year earlier. Revenues for the quarter were $20.2 million, compared with $9.7 million in the same period one year ago.

■

Priam Corp. announced revenues for the first fiscal quarter ended Sept. 30 of $20.6 million, compared with $26.2 million in the same period last year. Profits were $6.2 million, or 4 cents per share, compared with $3.4 million, or 3 cents per share, in the comparable quarter one year earlier.

■

Computer Consoles, Inc. reported revenues for the third quarter ended Sept. 30 of $33.3 million, compared with $27.6 million in the same period one year earlier. Profits declined to $1.3 million, or 12 cents per share, compared with $4 million, or 32 cents per share, in the same quarter of the previous year.

■

Automatic Data Processing, Inc. achieved revenues in the first quarter ended Sept. 30 of $236.5 million, compared with $202.3 million in the same period last year. Profits were $15.3 million, or 44 cents per share, compared with $13.6 million, or 39 cents per share, in the comparable quarter one year earlier.

■

Monolithic Memories, Inc. announced revenues for the fourth fiscal quarter ended Sept. 30 were $68 million, compared with $40.4 million reported in last year's quarter. Profits were $10.8 million, or 57 cents per share, compared with $5.8 million, or 32 cents per share, in the comparable quarter a year earlier.

■

Advanced Micro Device, Inc. announced profits for the second quarter ended Sept. 25 of $42 million, or 72 cents per share, compared with $12.1 million, or 21 cents per share, last year. Revenues were $257 million, compared with $128.4 million in the same quarter one year earlier.

■

Ask Comuter Systems, Inc. reported profits for the first quarter ended Sept. 30 increased 72% to $1.7 million, or 15 cents per share, compared with $991,000, or 9 cents per share, in the same period one year ago. Revenues were $18 million, compared with $12.4 million in the comparable quarter last year.

■

NBI, Inc. reported revenues for its first quarter ended Sept. 30 of $48 million, compared with $38.4 million in the same quarter last year. Profits were $3.6 million, or 40 cents per share, compared with $2.5 million, or 25 cents per share, for the comparable period one year earlier.

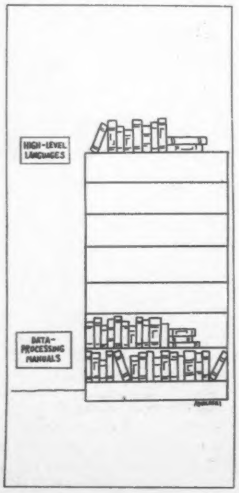
■

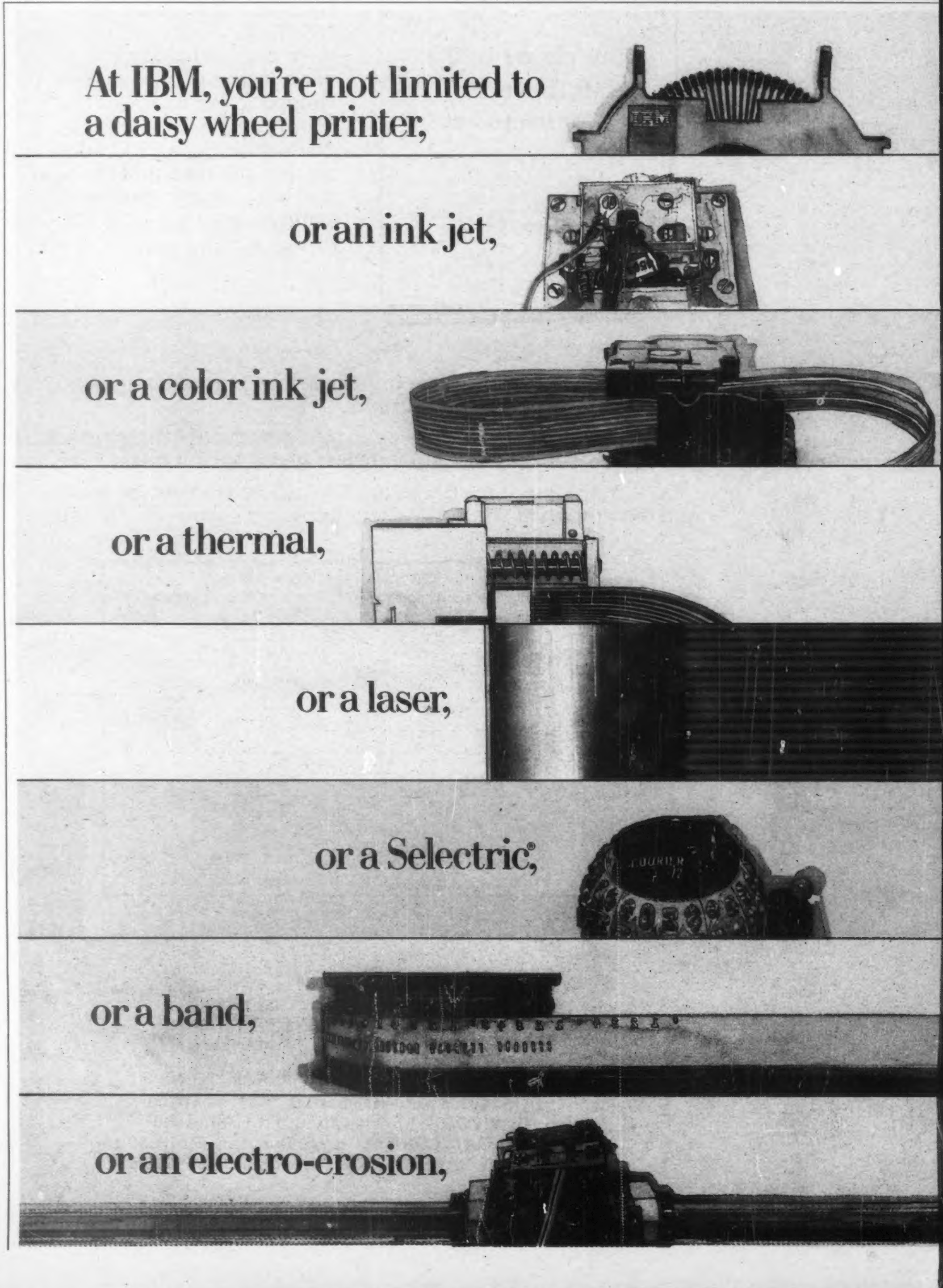
Dataproducts Corp. announced revenues for the quarter ended Sept. 29 of $114.1 million, compared with $91.4 million for the same period one year ago. Profits were $5.4 million, or 26 cents per share, compared with $5.1 million, or 25 cents per share, in the same quarter one year earlier.

■

Ducommun, Inc. announced revenues for the third quarter ended Sept. 28 of $105.8 million, compared with $82.2 million in the same period last year. Profits were $2.4 million, or 76 cents per share, compared with $2.2 million, or 73 cents per share, for the same quarter one year earlier.

■





COMPUTER INDUSTRY

Western Digital Corp. announced revenues for the first quarter ended Sept. 30 of $38.2 million, compared with $20.4 million in the comparable quarter one year earlier. Profits were $2.7 million, or 17 cents per share, compared with $1.1 million, or 7 cents per share, in the same period last year.

■

Seeq Technology, Inc. announced profits for the fourth quarter ended Sept. 30 of $1.4 million, or 11 cents per share, compared with $509,000, or 4 cents per share, in the same period one year ago. Revenues were $15.1 million, compared with $3.6 million one year earlier.

■

Micron Technology, Inc. reported revenues for the fiscal year ended Aug. 31 were $87.4 million, compared with $13.1 million for the same period one year earlier. Profits were $29 million, or 76 cents per share, compared with a loss of $2.6 million, or 5 cents per share, in the same period one year ago.

■

LSI Logic Corp. announced revenues for the third quarter ended Sept. 30 were $23.8 million, compared with $9.6 million in the same period one year ago. Profits were $4.2 million, or 16 cents per share, compared with $3.8 million, or 15 cents per share, in the comparable period last year.

■

Teledyne, Inc. reported profits for the third quarter ended Sept. 30 were $97.5 million, or $8.32 per share, compared with $71.9 million, or $3.53 per share, in the same period last year. Revenues were $853.8 million, compared with $743.2 million in the same period last year.

■

VLSI Technology, Inc. announced revenues for the third quarter ended Sept. 30 reached $18.9 million, a 146% increase compared with $7.6 million in the comparable period one year earlier. Profits were $2.1 million, or 11 cents per share, compared with a loss of $3.6 million, or 23 cents per share, last year.

■

Quality Systems, Inc. announced revenues for its fiscal quarter ended June 30 were $2.6 million, compared with $2.8 million in the same period one year earlier. Profits were $128,100, or 3 cents per share, compared with $338,000, or 8 cents per share, in the year-earlier quarter.

■

Intecom, Inc. reported revenues for the third quarter ended Sept. 30 of $40 million, compared with $23.5 million in the comparable period one year ago. Profits were $4.9 million, or 15 cents per share, compared with $3.3 million, or 10 cents per share in the year-earlier quarter.

■

Cipher Data Products, Inc. announced profits for the first fiscal quarter ended Sept. 30 were $3.7 million, or 28 cents per share, compared with $2.2 million, or 17 cents per share, in the same quarter one year earlier. Revenues were $38.8 million, compared with $24.1 million in the same period one year ago.

■

Silicon Systems, Inc. reported revenues for the fiscal year ended Sept. 29 were $56.6 million, compared with $22.6 million in the same period one year earlier. Profits were $8 million, or $1.25 per share, compared with a loss of $2.5 million, or 42 cents per share, in the same fiscal period one year ago.

■

Seagate Technology, Inc. announced profits for the first fiscal quarter ended Sept. 30 were $577,000, or 1 cent per share, compared with $4.4 million, or 10 cents per share, for the same quarter a year ago. Revenues were $50.6 million, compared with $50.6 million in the comparable quarter one year ago.

■

Ungermann-Bass, Inc. reported revenues for the third quarter ended Sept. 30 were $5 million, compared with $6.6 million in the comparable quarter last year. Profits were $1.7 million, or 11 cents per share, compared with $891,000, or 5 cents per share, in the same period one year ago.

■

Iomega Corp. reported revenues for the third quarter ended Sept. 30 of $15.6 million, compared with $3.2 million for the same period one year ago. Profits were $1.7 million, or 13 cents per share, up from a loss of $2.4 million, or 21 cents per share, in the same quarter one year earlier.

See DIMES page 110

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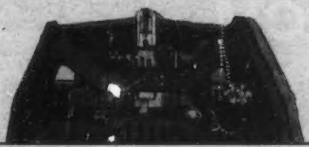

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DIMES

from page 109

Computer Task Group, Inc. announced revenues for the third quarter ended Sept. 30 were $21.8 million, compared with $13.5 million in the comparable quarter last year. Profits were $538,000, or 26 cents per share, compared with $406,000, or 21 cents per share, in the same period one year ago.

■

Tandy Corp. announced consolidated revenues for the first quarter ended Sept. 30 were approximately $596.1 million, a 2% increase from year-earlier revenues of $583.4 million. The company will release its first-quarter earnings in the latter part of October.

■

CMC International, Inc. announced a second-quarter operating loss of $259,000, or 14 cents per share, on revenues of $589,000, compared with a net loss of $137,000, or 10 cents per share, on revenues of $972,000 in the same quarter one year earlier.

■

Decision Data Computer Corp. reported revenues for the third quarter ended Aug. 31 of $37.6 million, compared with $26.4 million for the same period a year ago. Profits were $2.1 million, or 27 cents per share, compared with $1.5 million, or 19 cents per share, reported in the year-earlier period.

■

Mediflex Systems Corp. announced revenues for the first quarter ended Aug. 31 of $8.9 million, compared with revenues of $6.5 million in the same period a year ago. Profits were $770,000, or 18 cents per share, compared with $621,000, or 16 cents per share, in the year-earlier quarter.

■

Megatest Corp. announced revenues for the fourth quarter of $10.4 million, compared with revenues of $8 million in the same period one year earlier.

■

Corvus Systems, Inc. reported profits for the first quarter were $291,000, or 3 cents per share, compared with $1.4 million, or 14 cents per share, in the same period one year ago. Revenues were $14.2 million, compared with $14.9 million in the year-earlier period.

■

Intermetrics, Inc. reported that revenues for the second quarter ended Aug. 31 were $11 million, compared with $7.7 million in the same period one year earlier. Profits were $147,000, or 5 cents per share, compared with a loss of $276,000, or 10 cents per share, in the year-earlier period.

■

Alpha Microsystems, Inc. announced revenues for the second quarter of $13.2 million, compared with $12.8 million reported in the same period a year earlier. Profits were $906,000, or 28 cents per share, compared with $898,000, or 32 cents per share, in the year-earlier period.

■

American Software, Inc. reported revenues for the first quarter of fiscal year 1984 ended July 31 of $6.5 million, up 46% from $4.5 million in the comparable period one year ago. Profits were $1.1 million, or 28 cents per share, compared with $932,698, or 22 cents per share, in the same quarter one year earlier.

■

Northern Data Systems, Inc. announced revenues for the first quarter ended August 31 of $3.2 million, compared with $2.6 million reported in the same quarter one year ago. Profits were $361,000, or 15 cents per share, compared with $219,000, or 10 cents per share, for the year-earlier quarter.

■

Systematics, Inc. announced profits for the quarter ended August 31 of 1.5 million, or 14 cents per share, compared with $1.6 million, or 15 cents per share, in the first quarter of the previous year. Revenues were $21.8 million, compared with $19 million in the same period last year.

■

Software AG Systems, Inc. reported revenues for the first quarter of $11.9 million, compared with $8.6 million for the comparable period in the previous year. Profits were $1.9 million, or 30 cents per share, compared with $1.1 million, or 18 cents per share, in the same period one year earlier.

■

Micropro International Corp. announced a 53% increase in revenues to $66.9 million for the fiscal year ended August 31, compared with $43.7 million reported for the previous fiscal year. Profits were $5.7 million, or 49 cents per share, compared with $4.3 million, or 38 cents per share, in the comparable period one year earlier.

The company also reported a loss of $756,000, or 6 cents per share, for the fourth quarter ended Aug. 31, compared with earnings of $2.6 million, or 23 cents per share, for the year-earlier period. Revenues were $12.3 million, compared with $15.5 million for the same period one year ago.

■

Sykes Datatronics, Inc. announced that its second-quarter results produced a loss of $2.3 million, or 18 cents per share, compared with the same net loss in the comparable period one year earlier. Revenues were $4.5 million, compared with $5.8 million in the same period last year.

■

CGA Computer, Inc. announced record revenues for the first quarter of fiscal 1985 ended July 29 of $14.2 million, up from $10.1 million in the same period one year earlier. Profits were $250,000, or 7 cents per share, compared with $89,000, or 2 cents per share, in the same quarter one year ago.

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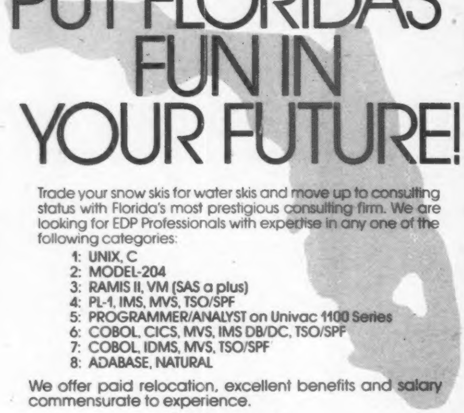

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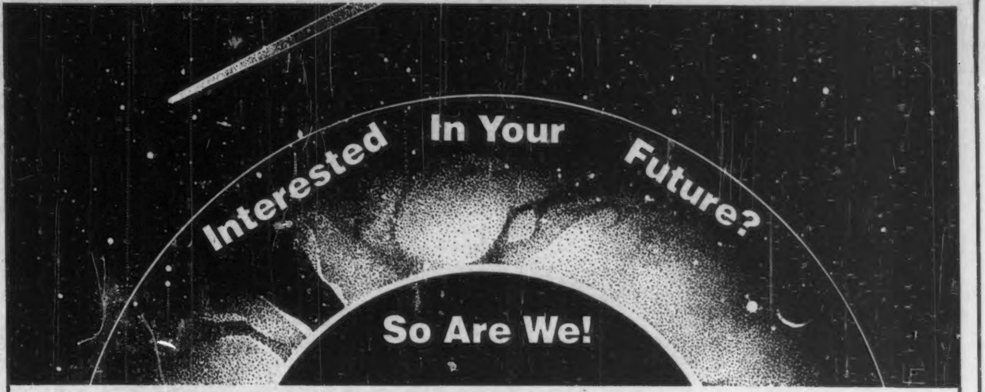

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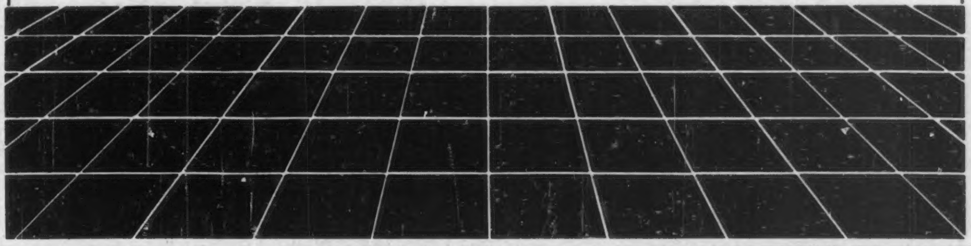

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Candidate with statistical background as well as a facility in English, Arabic, and Indian (Jakarti) languages, to work with programmers who use a computer that acts as a translating device whereby foreign language material (in this case Arabic and Indian) is automatically translated in to English and/or other languages as required. Candidate must read and translate foreign language symbols which may have multiple meanings; perform statistical analysis and chart probabilities to accurately reflect their meaning. Requires a Bachelors Degree in Statistics. No experience, but requires knowledge of Arabic and Indian (Jakarti). Salary offered $27,000/yr. 40 hours/wk. 9am-5pm. M/F. Send resumes to: Illinois Job Service, 910 South Michigan Avenue, Room 333, Chicago, IL 60605, Attn: Mary Millea, Reference #3666. An employer paid ad.

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Research activities in the area of computer communications technologies to support distributed computing. Research and analysis of local area network protocol standards such as IEEE 802 CSMA/CD token bus, logical link control and ARPANET protocols. Perform validation and performance evaluation studies of protocols by designing and building simulation and queuing models using SIMPAS and PASCAL. Maintain and modify SIMPAS compiler. Use of Multics operating system.

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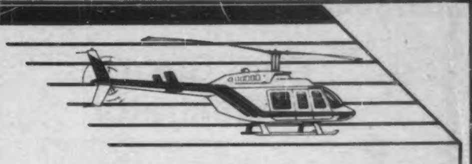

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Data Processing

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4331-2	0.50	1 to 4	3033UP	5.0	4 to 24
4341-9	0.52	1 to 4	3083B	6.3	8 to 32
4341-10	0.75	2 to 4	•3083BX	6.6	8 to 32
4341-1	0.88	2 to 4	3083J	8.4	8 to 32
4341-11	1.1	2 to 8	•3083JX	8.8	8 to 32
4361-4	1.15	2 to 12	3033MP	8.5	8 to 32
3031	1.2	2 to 8	3033AP	8.5	4 to 24
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4341-12	1.65	2 to 16	•3081GX	11.9	16 to 64
3031AP	2.0	2 to 8	3081K	14.0	16 to 48
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3032	2.5	2 to 8	3084G	26.6	32 to 96
*4381-2	2.7	4 to 16	•3084QX	28.7	32 to 128
3033S	2.9	4 to 16			

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5850	11.6	16 to 64
5860	14.0	16 to 64
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AS/8053	6.5	8 to 32
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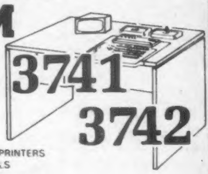

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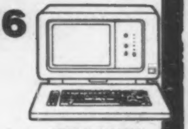

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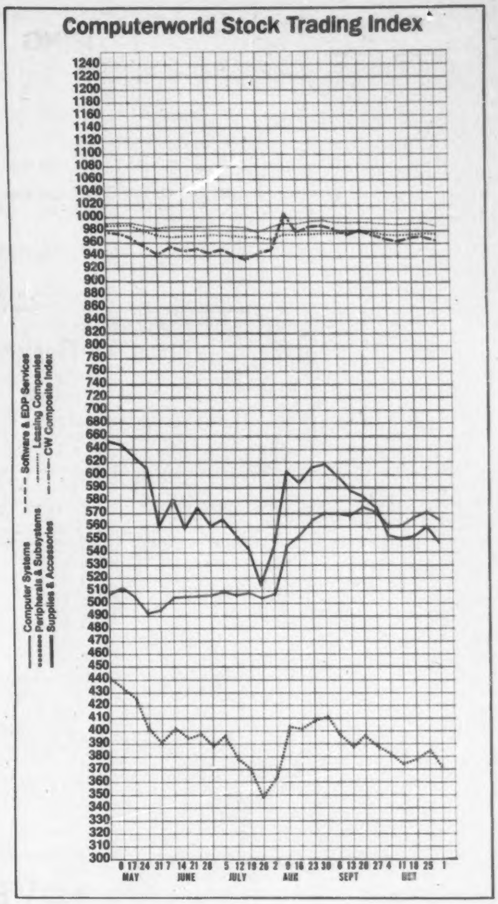

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COMPUTER SYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	ALPHA MICROSYSTEMS	8- 24	7 5/8	- 5/8	-7.5
O	ALTOS COMPUTER SYST	8- 21	9 1/4	- 1/2	-5.1
A	AMDAHL CORP	10- 30	11 1/8	+ 3/8	+3.4
O	APPLE COMPUTER INC	18- 63	24 7/8	-1 1/8	-4.3
N	AT&T	15- 21	18 1/2	- 1/8	-0.6
N	BURROUGHS CORP	44- 59	56 1/8	+ 5/8	+1.1
O	COMPAQ COMPUTER CP	4- 15	5 5/8	+ 3/8	+7.1
O	COMPUTER AUTOMATION	5- 17	5 3/8	- 1/2	-8.5
A	COMPUTER CONSOLES	9- 26	10 3/8	+1 1/8	+12.1
N	CONTROL DATA CORP	25- 62	33 7/8	+3 1/4	+10.6
O	CONVERGENT TECHNOL	7- 41	6 7/8	- 1/2	-6.7
N	CRAY RESEARCH INC	39- 58	52	-1 1/2	-2.8
O	DAISY SYSTEMS CORP	14- 28	25 1/4	-1 3/4	-6.4
N	DATA GENERAL CORP	27- 59	52 5/8	-2 1/4	-4.1
N	DATAPOINT CORP	14- 31	14 3/4	- 5/8	-4.0
N	DIGITAL EQUIPMENT	64-125	102 7/8	+1 1/4	+1.2
A	EECO INC	12- 16	13 1/8	- 1/4	-1.8
N	ELECTRONIC ASSOC.	3- 15	4	+ 3/8	+10.3
N	FLOATING POINT SYST	13- 44	17 1/4	+ 3/8	+2.2
N	FOXBORO	28- 47	31 1/8	+ 1/2	+1.6
O	GENERAL AUTOMATION	6- 16	5 5/8	- 3/8	-6.2
N	GOULD INC	21- 44	22 1/2	0	0.0
N	HARRIS CORP	23- 49	25 3/4	- 1/2	-1.9
N	HEWLETT-PACKARD CO	31- 48	36 1/4	-2 1/2	-6.4
N	HONEYWELL INC	46- 69	59 1/2	- 1/4	-0.4
N	IBM	103-134	124 5/8	-2	-1.5
O	IPL SYSTEMS INC	2- 14	2	- 1/2	-20.0
N	ITT CORP	21- 47	27 7/8	-2 1/8	-7.0
N	M/A-COM INC	13- 35	17 5/8	-1 3/4	-9.0
N	MANAGEMENT ASSIST	9- 29	27	+ 1/8	+0.4
N	MATSUSHITA ELEC(ADR)	60- 88	67	-2 3/4	-3.9
N	MODULAR COMPUTER SYS	6- 16	7 3/8	+ 1/4	+3.5
N	MOHAWK DATA SCI	9- 17	10 1/4	- 1/4	-2.3
N	MOTOROLA INC	29- 49	34 3/4	-1 3/4	-4.7
N	NAT'L SEMICONDUCTOR	11- 20	12 1/8	-1	-7.6
N	NBI INC	17- 36	17 1/8	- 5/8	-3.5
N	NCR	21- 34	25 7/8	- 1/8	-0.4
N	PERKIN-ELMER	18- 37	23 1/4	- 3/4	-3.1
N	PRIME COMPUTER INC	11- 26	16 3/4	- 3/4	-4.2
N	SPERRY CORP	35- 50	37 3/8	- 5/8	-1.6
O	STRATUS COMPUTER INC	9- 17	9 1/2	0	0.0
O	TANDEM COMPUTERS INC	15- 40	18 1/4	+ 7/8	+5.0
N	TANDY CORP	24- 62	23 1/2	-1 5/8	-6.4
O	TELEVIDEO SYSTEMS	4- 41	3 1/2	- 3/8	-9.6
O	TELXON CORP	8- 17	16 3/4	+ 3/8	+2.2
N	TEXAS INSTRUMENTS	101-169	125 3/8	-7 3/8	-5.5
A	ULTIMATE CORP	15- 24	16 3/4	-2 1/8	-11.2
O	VECTOR GRAPHICS INC	0- 9	1/4	0	0.0
A	WANG LABS "B"	24- 42	26	-2	-7.1
A	WANG LABS "C"	24- 42	26 1/2	-2	-7.0
N	XEROX CORP	35- 52	35 1/2	- 1/2	-1.3

LEASING COMPANIES

EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	BOOTHE FINANCIAL CP	10- 22	21 1/2	+ 5/8	+2.9
A	CMI CORP	4- 10	7 1/2	- 1/2	-6.2
N	COMDISCO INC	10- 42	12 1/4	- 1/8	-1.0
O	CONTINENTAL INFO SYS	5- 16	7	0	0.0
N	DPF INC	10- 16	16 1/8	+ 3/8	+2.3
O	FINALCO GROUP INC	4- 12	6	0	0.0
O	PHOENIX AMERICAN INC	5- 17	5 7/8	- 1/8	-2.0
O	SELECTERM INC	11- 21	10 1/2	-1 3/4	-14.2
N	U.S. LEASING	29- 44	35 5/8	- 1/2	-1.3

COMPONENTS

EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADVANCED MICRO DEV	25- 41	32	-4 5/8	-12.6
O	ADV'D SEMICONDUCTOR	16- 38	16 1/2	-2 3/4	-14.2
N	ANALOG DEVICES INC	20- 32	23	-2	-8.0
O	ANALOGIC CORP	10- 31	12 1/4	+1	+8.8
N	APPLIED MAGNETICS CP	9- 37	9 1/8	- 1/2	-5.1
O	HADCO CORP	6- 12	6 3/4	- 1/2	-6.8
O	MICRO MASK INC	10- 19	10 3/8	-1	-8.7
N	TERADYNE	23- 39	25 5/8	+ 3/8	+1.4

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EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	3- 8	2 1/2	- 1/4	-9.0
N	ADVANCED SYSTEMS INC	14- 22	14 5/8	- 1/2	-3.3
O	AGS COMPUTERS INC	11- 32	12 3/4	0	0.0
O	AMERICAN SOFTWARE	13- 31	14 1/4	0	0.0
N	ANACOMP INC	2- 19	2 3/8	- 3/8	-13.6
O	ANALYSTS INTL CORP	5- 17	5 1/2	- 1/2	-8.3
A	APPLIED DATA RES	18- 37	26	+1	+4.0
O	ASHTON TATE	6- 15	7	-1 1/2	-17.6
O	ASK COMPUTER SYSTEMS	13- 21	15 1/2	-1	-6.0
B	ASTRADYNE COMP IND	1- 7	1 3/4	+ 1/8	+7.6
N	AUTOMATIC DATA PROC	30- 44	37 3/8	-1 1/8	-2.9
O	CGA COMPUTER ASSOC	9- 17	12 3/4	+ 1/8	+0.9
O	COMPUTER ASSOC INT'L	15- 35	17 1/4	-1	-5.4
O	COMPUTER HORIZONS	8- 20	5 3/4	+ 3/8	+6.9
O	COMPUTER NETWORK	5- 11	7 1/4	0	0.0
N	COMPUTER SCIENCES	11- 23	12 5/8	- 7/8	-6.4
O	COMPUTER TASK GROUP	12- 19	15	-1	-6.2
O	COMPUTER USAGE	6- 18	6	- 3/4	-11.1
O	COMPUTONE SYSTEMS	4- 23	6 5/8	0	0.0
O	COMSERV CORP	1- 16	2 1/2	- 3/8	-13.0
O	COMSHARE	7- 14	7 3/8	- 3/8	-4.8
N	CULLINET SOFTWARE	24- 50	43 1/2	+ 1/4	+0.5
O	CYCARE SYSTEMS INC	16- 25	20	+ 1/2	+2.5
O	HOGAN SYSTEM INC	10- 27	10 1/4	-1	-8.8
N	GENERAL ELECTRIC CO	45- 59	57 1/2	+ 1/4	+0.4
N	GTE CORP	36- 48	40 1/2	-1 3/8	-3.2
N	INFORMATICS GENERAL	15- 32	15 3/4	+ 7/8	+5.8
O	INFORMATION SCIENCE	5- 17	5 1/4	0	0.0
O	INFOTRON SYSTEMS CP	24- 43	24 1/2	0	0.0
O	KEANE ASSOCIATES	6- 15	12	0	0.0
A	LOGICON	18- 31	27 3/4	- 1/4	-0.8
O	LOTUS DEVELOPMENT CP	15- 40	18 1/4	-4 1/4	-18.8
O	MCI COMMUNICATIONS	6- 28	8 3/4	+ 3/8	+4.4
O	MNGT SCI AMER INC	9- 33	10	+1	+11.1
O	MATHEMATICAL APP GRP	6- 18	8 1/2	0	0.0
O	MICOM SYSTEMS INC	31- 50	33 3/4	- 1/2	-1.4
O	MICROPRO INT'L CP	3- 10	3 3/8	+ 5/8	+22.7
O	MONCHIK-WEBER CP	6- 22	14 7/8	0	0.0
O	NATIONAL DATA CORP	9- 26	9 1/8	-1 1/8	-10.9
O	ON-LINE SOFTWARE INT	6- 29	5 1/2	- 3/4	-12.0
O	PANSOPHIC SYSTEMS	11- 30	11 1/8	+ 1/8	+1.1
N	PLANNING RESEARCH	10- 21	10	- 1/4	-2.4
O	POLICY MGMT SYSTS CP	22- 35	24 3/8	- 3/8	-1.5
O	PROGRAMMING & SYS	4- 8	4 1/2	- 1/4	-5.2
O	REYNOLDS & REYNOLD	28- 53	32	+1 1/4	+4.0
O	SEI CORP	11- 34	13 1/4	+1 3/4	+15.2
O	SHARED MEDICAL SYST	23- 43	27 1/4	+ 3/8	+1.3
O	SCIENTIFIC COMPUTERS	6- 14	5 7/8	-2 3/4	-31.8
O	SOFTWARE AG	9- 15	12 5/8	- 1/2	-3.8
N	URS CORP	10- 18	13 1/4	- 1/4	-1.8
N	UCCEL	7- 17	12 1/8	0	0.0

PERIPHERALS & SUBSYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
P	AM INTERNATIONAL	2- 7	2 7/8	- 1/8	-4.1
A	ANDERSON JACOBSON	5- 26	5 1/4	+ 1/8	+2.4
O	AUTO-TROL TECHNOLOGY	10- 29	10	- 1/2	-4.7
O	AVANT-GARDE COMPUTNG	15- 29	19 3/4	- 3/4	-3.6
O	BANCTEC INC	5- 22	7 3/4	- 1/2	-6.0
A	BEEHIVE INT'L	1- 15	5/8	0	0.0
N	BOLT,BERANEK & NEW	17- 30	20 1/2	- 7/8	-4.0
O	CAMBEX CORP	1- 3	2 1/4	-	-2.7
N	CENTRONICS DATA COMP	8- 28	11 1/4	+1 1/8	+11.1
A	CETEC CORP	7- 12	8 1/8	- 1/2	-5.7
A	COGNITRONICS	4- 20	4 1/8	- 1/8	-2.9
N	COMPUGRAPHIC CORP	26- 40	30	+ 1/4	+0.8
O	COMPUTER TRANSCEIVER	1- 10	7/8	- 5/8	-41.6
N	COMPUTERVISION CORP	29- 53	42 1/8	-2 3/8	-5.3
N	CONRAC CORP	11- 24	13 7/8	+ 1/4	+1.8
A	DATAPRODUCTS CORP	15- 32	15 1/8	-1 1/8	-6.9
A	DATARAM CORP	4- 12	4 1/4	+ 1/4	+6.2
O	DATA SWITCH CORP	6- 41	6 3/4	0	0.0
O	DATUM INC	5- 17	5 1/4	+ 1/4	+5.0
O	DECISION DATA COMPUT	9- 16	12 5/8	+ 3/8	+3.0
O	DOCUTEL-OLIVETTI	5- 39	4 1/2	- 3/8	-7.6
N	ELECTRONIC M & M	5- 11	6 3/4	- 1/2	-6.8
O	ENDATA, INC	8- 16	7 1/2	- 1/2	-6.2
O	EVANS & SUTHERLAND	13- 50	14	-1	-6.6
O	GANDALF TECHNOLOGIES	9- 14	13 1/8	+ 1/8	+0.9
N	GEN'L DATA COMM IND	10- 20	17 3/4	- 7/8	-4.6
N	HAZELTINE CORP	16- 33	31 3/4	- 3/4	-2.3
O	ICOT CORP	3- 8	3 1/4	- 3/8	-10.3
O	INFORMATION INTL INC	10- 19	11 3/4	+ 1/4	+2.1
O	INTECOM INC	7- 21	10 7/8	- 1/2	-4.3
O	INTEL CORP	27- 45	27 3/4	-3	-9.7
A	LUNDY ELECTRONICS	7- 19	9	- 5/8	-6.4
O	MEGADATA CORP	8- 15	12 1/4	+ 1/2	+4.2
A	MSI DATA CORP	9- 25	9 1/2	- 1/4	-2.5
N	NASHUA CORP	19- 29	25 5/8	+ 1/8	+0.4
O	NETWORK SYSTEMS CORP	16- 34	22 1/2	-1 1/4	-5.2
N	NO AMERICAN PHILIPS	30- 40	38 1/8	0	0.0
N	NORTHERN TELECOM LTD	30- 49	38 3/8	- 1/4	-0.6
O	OMEX	1- 6	1/8	0	0.0
N	PARADYNE CORP	11- 26	13 7/8	+ 1/8	+0.9
A	PENRIL CORP	9- 14	11 1/2	-1 1/8	-8.9
N	PLESSEY CO (ADR)	25- 41	26 1/2	+1 1/4	+4.9
O	PRINTRONIX INC	16- 34	21 1/2	+ 7/8	+4.2
O	RAMTEK CORP	6- 23	6	- 1/2	-7.6
N	RECOGNITION EQUIP	10- 17	13	- 1/2	-3.7
N	ROLM CORP	30- 80	69	+1 5/8	+2.4
N	SANDERS ASSOCIATES	36-120	38 7/8	-1 5/8	-4.0
O	SCAN DATA	1- 3	3/8	0	0.0
O	SCAN-TRON CORP	9- 19	11 1/4	+ 1/4	+2.2
N	SCIENTIFIC ATLANTA	8- 23	8 3/8	+ 1/4	+2.8
O	SEAGATE TECHNOLOGY	5- 20	5 3/8	- 1/8	-2.2
N	STORAGE TECHNOLOGY	3- 23	2 5/8	-2 5/8	-50.0
O	SYKES DATATRONICS	2- 13	1 5/8	- 1/4	-13.3
O	SYSTEMS & COMP TECH	20- 39	26 3/4	- 1/2	-1.8
A	T BAR INC	7- 17	7 1/4	- 1/2	-6.4
A	TAB PRODUCTS CO	13- 20	17 1/4	+1 1/8	+6.9
O	TANDON CORP	7- 35	7 7/8	+ 5/8	+8.6
A	TEC INC	6- 12	9 1/4	+ 1/8	+1.3
N	TEKTRONIX INC	52- 87	58 1/4	- 3/8	-0.6
N	TELEX	19- 35	34 3/8	- 5/8	-1.7
O	TESDATA SYSTEMS CP	2- 17	2 1/4	- 3/4	-25.0
N	TIMEPLEX INC	13- 23	18	- 1/2	-2.7
O	VISUAL TECHNOLOGY	3- 26	3	- 3/8	-11.1

SUPPLIES & ACCESSORIES

EXCH		1983-84 RANGE (1)	CLOSE OCT 31 1984	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN BUS PRODS	17- 23	21 3/8	- 5/8	-2.8
N	BARRY WRIGHT	22- 33	28 1/2	+ 1/8	+0.4
A	DUPLEX PRODUCTS INC	22- 27	26 1/4	- 1/4	-0.9
N	ENNIS BUS. FORMS	18- 28	23 7/8	+ 3/8	+1.5
N	3M COMPANY	69- 90	81 3/8	- 7/8	-1.0
M	MOORE CORP LTD	35- 51	41 3/4	- 1/2	-1.1
O	STANDARD REGISTER	27- 43	41	0	0.0
N	WALLACE COMP SERVICE	23- 33	29 1/8	- 3/4	-2.5

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